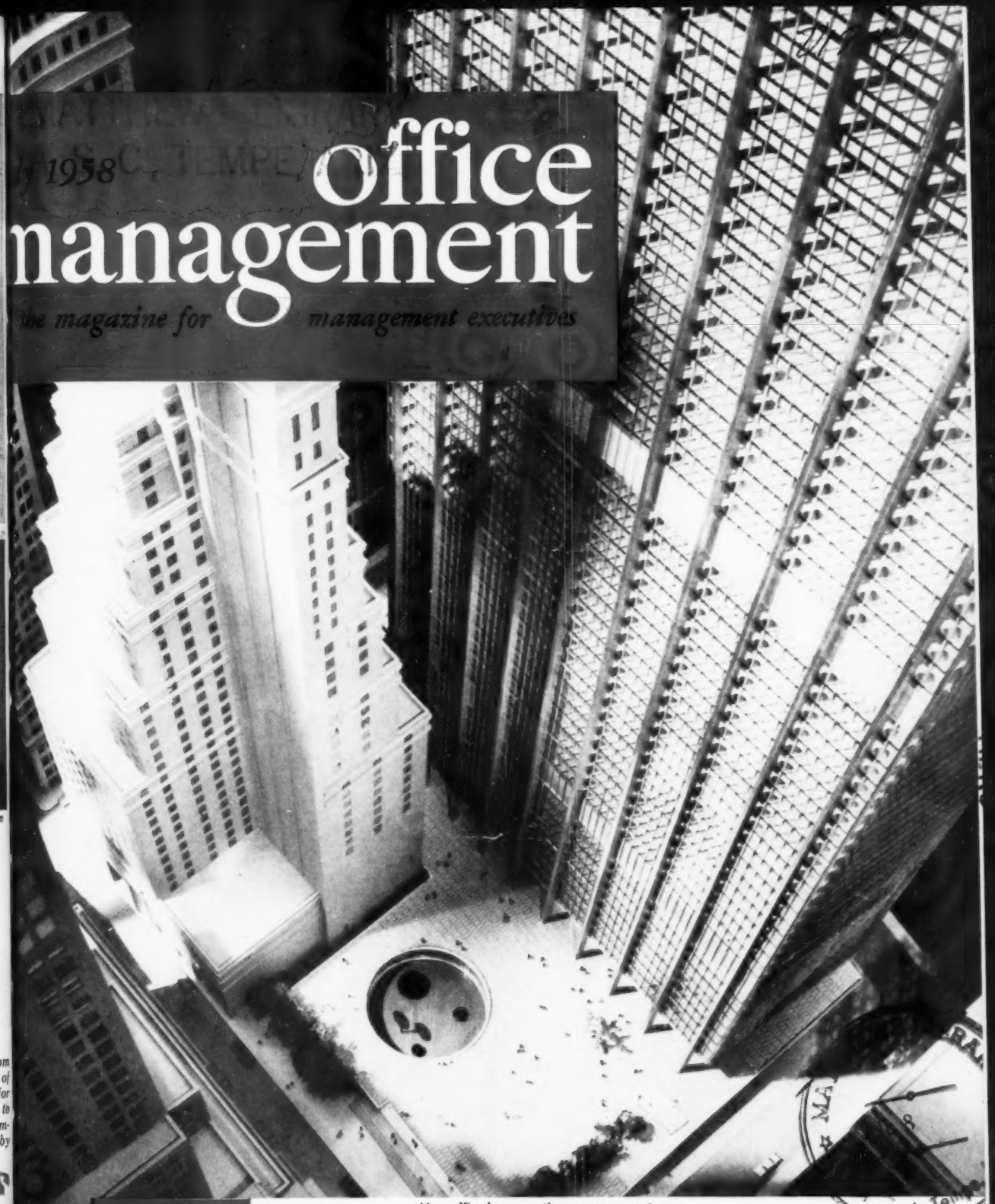
1958

office management

the magazine for management executives



New office boom continues across country

in this issue

- Business indicators emphasize need for cost control
- Economic Mobilization Conference sounds optimistic note
- NOMA concludes 39th International Conference in Chicago

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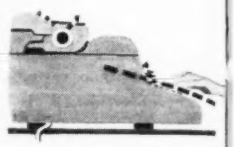

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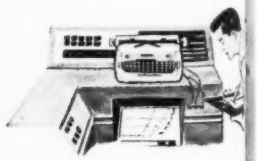

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For example: they reach promising prospects faster, speed up slow deliveries, keep you in quick, personal touch with your own sales force, branch offices, and other company units.

In every operation of business—in sales, purchasing, collections, production, shipping—out-of-town calls furnish fast, personal, *profitable* communications.

Why not check to see if your people are making full, regular use of out-of-town telephone calls to increase profit?

More and more companies are discovering that *it pays.*

YOU SAVE MONEY
WHEN YOU CALL STATION-TO-STATION
instead of Person-to-Person

For example:	Day Rates (first 3 minutes) Person-to-Person	Station-to-Station	Each Added Minute (applies to all calls)
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Des Moines to Chicago	$1.40	$1.00	25¢
Washington, D.C., to Boston	$1.55	$1.10	30¢
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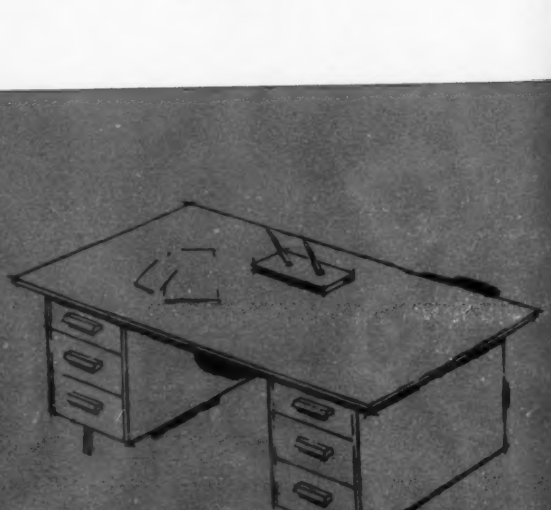

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in this issue:

Business indicators emphasize need for continuing cost control in office 19
by Robert M. Smith

NOMA concludes 39th International Conference in Chicago 22

Why small companies may need automation even more than larger concerns 24

Economic Mobilization Conference sounds optimistic note 27

Why space planning and design are vital to a company's growth 30
by Michael Saphier and Lawrence Lerner

Let's be realistic in setting job requirements 32
by Raymond Dreyfack

Automation in the office 35

Tools of the office series 40
This month: Equipment for "automation in the office"
by Frederick Vogel

Semi-annual index, January-June, 1958 60

Profile of our reader *(Editorial)* 82

THE new office complex now under construction in downtown New York for that city's Chase-Manhattan Bank furnishes tangible, steel and concrete evidence that the boom in office construction has lost none of its vigor, and that older city business districts are not nearly as exhausted as alarmists have feared. For Chase-Manhattan has selected the heart of the oldest business district of the metropolis—the Wall St. area.

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The big office today, with its adoption of the modern techniques of integrated data processing ... automation ... advanced personnel management ... streamlined systems and controls ... has become the nerve center of all communications and planning. The things that are happening in America's big offices are the harbingers of the economy ahead. Here therefore is a clue to good tidings:
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in the entire office field—
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with the May 1958 issue
This simply means that America's management executives concerned with office administration, in greater and greater numbers, are pursuing new ideas ... new plans ... new initiative. It augurs well for the general economy. For the manufacturer with a product for the office, it means even more—the current strength as well as the inherent stability of the office market.
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Sales volume, capital expansion expected to rise

The American Management Association announced recently that, according to a nation-wide survey of top companies on the economic outlook, 1958's sales volume and capital expansion figures will match or surpass those of 1957. Most of the 688 company presidents interviewed also stated that they will be spending as much or more money this year on direct sales effort, advertising and sales promotion, research and new product development than they did in 1957.

During 1957, U. S. Department of Commerce figures showed that sales volume surpassed $675 billion. Following is a summary of the preliminary survey results of the expectations of the 688 participating companies in 1958 as compared with 1957:

Sales Volume—more, 52.5 per cent; less, 47.1 per cent.

Capital Expansion—more, 54.3 per cent; less, 44.2 per cent.

Direct Sales Effort—more, 95.8 per cent; less, 3.3 per cent.

Advertising and Sales Promotion—more, 80.5 per cent; less, 18.8 per cent.

Research and Development—more, 93.4 per cent; less, 5.4 per cent.

Profits—more, 42.5 per cent; less, 57.0 per cent.

The firms represented by these replies employ almost 5 million workers, or 8.6 per cent of the civilian nonfarm employment as of last April.

One per cent of those queried failed to answer the survey.

Money handling may be obsolete in 50 to 75 years

A prediction by Designers for Industry, Cleveland specialists in data processing equipment and electronic systems, that within 50 to 75 years more than 200 million Americans may conduct their financial affairs without the use of cash, coins or checks, was made recently.

The amount of time necessary to change over our present bulky money-handling system is the only remaining barrier in the way of incorporating this method, according to DFI calculations. All typical components of such a system, it is stated, are already understood and can be built.

Under the new monetary system, all bank deposits and withdrawals, all "charge" payments and so-called "cash" purchases will be made with

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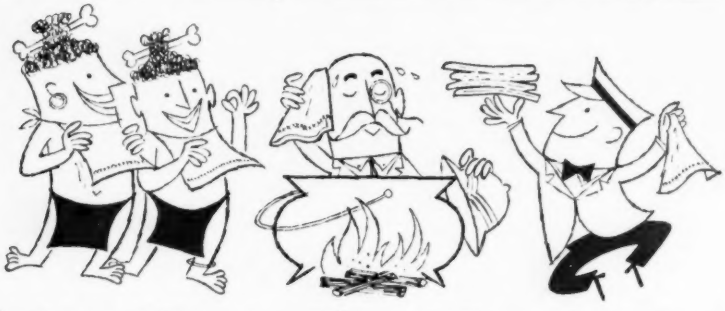

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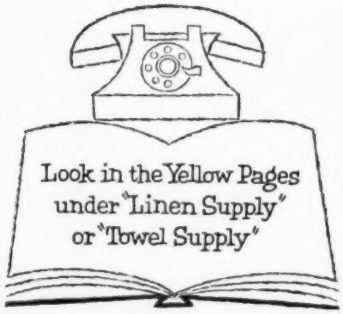

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the use of individual "electronic pocketbooks" and auxiliary data processing equipment used by employers, businesses and banks. The new system, it is pointed out, will "revolutionize every phase of financial activity."

1958 tile color chart is published

A new Color Classification Chart of Asphalt Tile for 1958 has recently been published under the auspices of the Asphalt and Vinyl Asbestos Tile Institute, 101 Park Ave., New York. The chart gives the most recent listing for Armstrong, Azrock, Bonafide, Gold Seal, B. F. Goodrich, Johns-Manville, Kentile, and Tile-Tex asphalt tile in the various marbleized, terrazzo and cork patterns, according to the Institute.

The chart indicates currently available colors and patterns and also the various tiles that give the same general color tone or effect.

A copy of this chart is available from the Institute at the above address, free, upon request.

In Short—

Report shows significant slackening in business failures

Dun & Bradstreet, Inc., New York, concludes in a recent study, that although business failures currently are climbing to new postwar peaks, the rise in failures has diminished considerably. The increase amounted to eight per cent in 1957 as compared to 16 per cent between 1955 and 1956, and amounted to ten per cent in the first three months of 1958. Dun's "Failure Index" shows that 52 concerns failed in 1957 for every 10,000 listed in the D & B Reference Book. This rate has edged up from 48 a year ago, but falls well below the 70 per cent 10,000 recorded in 1939.

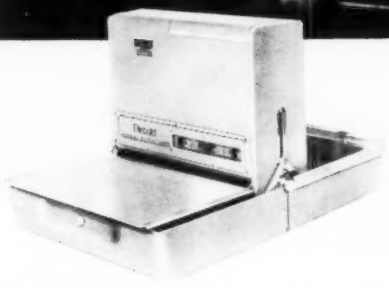
Extensive revisions now incorporated in ASA for records films

Scientific advances in the field of photographic films for permanent records during the past 13 years have caused extensive revision to be made to the American Standard Specifications for Photographic Films. The re-

(*To page* 11)

no. 10 in a series on low cost microfilming procedures

how just one application of procedural microfilming* can save one hour a day with the low cost



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vision has recently been published and replaces the earlier Standard version which was approved in 1945. The new standard applies to microfilms, motion-picture films, roll films, and sheet films of the safety-cellulose ester type which have gelatine-silver halo emulsions developed in ordinary processing solutions to produce a "black and white" photographic image.

Home study courses used to help workers advance to higher positions

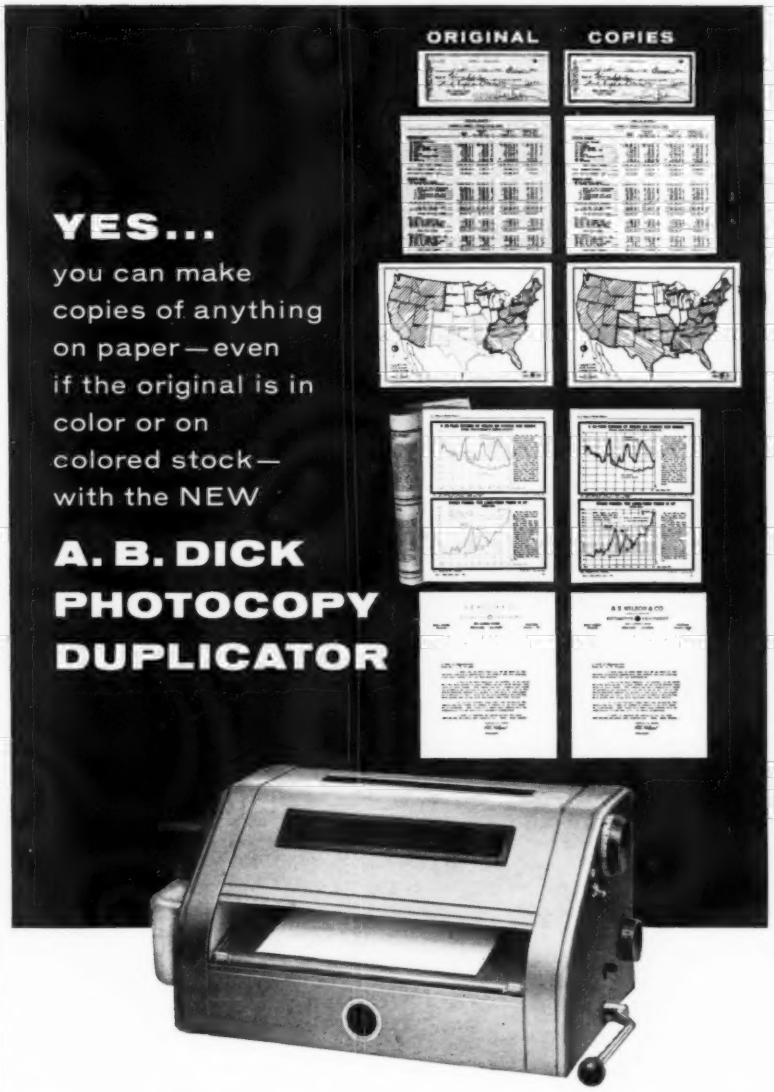
Two new home study courses for office workers have been developed by the National Office Management Association. The "General Clerical Course" offers practical instruction in basic office procedures for office workers in a variety of office job classifications. The "Modern Office Management Course" is directed primarily at junior office executives seeking to improve their chances for advancement to higher office management positions. The Association, with these two new courses, now has four courses of instruction, including the "Development of Leadership Course" and the "Office Executive Course." Complete details on all four Noma Home Study Courses are available, free, from NOMA, 1931 Old York Road, Willow Grove, Pa.

First conference of records executives, administrators is held

The Communications and Records Center of the Standard-Vacuum Oil Co. in White Plains' N. Y., was the site of the first annual Records Management Conference on Friday, May 2. One hundred and fifteen persons attended the conference, the main consideration of which was information retrieval, as explained in discussions of the Esso Research and Engineering Co.'s facilities at Linden, N. J., for accumulating, classifying, indexing, storing and presenting technical and other information required by technicians and management of Standard Oil and its affiliated companies.

Smith-Corona, Marchant merger is approved by directors

The projected merger between Smith Corona, Inc. and Marchant Calculators, Inc., on the previously announced basis of one-and-one quarter shares of Smith-Corona for each share of Marchant, has been approved at separate meetings by the boards of directors of both companies. Stockholders of both companies held special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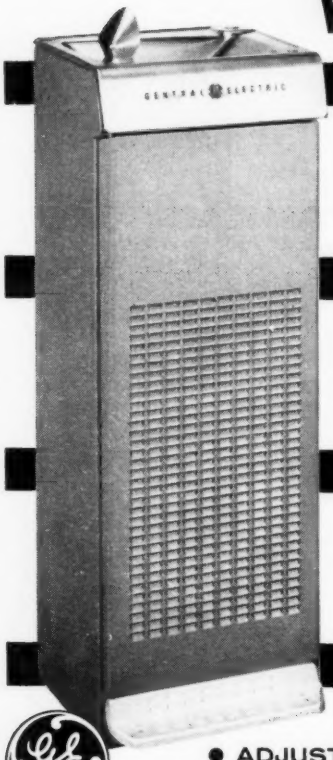

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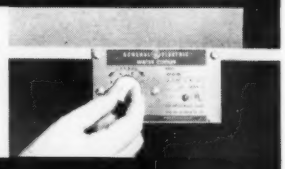

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meetings on June 26 to vote on the proposed merger. New name for the company will be Smith-Corona Marchant, Inc., with Marchant to be operated as a separate division, should stockholders approve the merger.

People in the News

George C. Emmons has been appointed controller of the Supplies Division of International Business Machines Corp., New York, and *Laurence M. Redmond* has been appointed manager of planning with the same division.

Fred I. Courtney has been elected president of Virginia Metal Products, Inc., Orange, Va.

V. H. Haase has been named secretary and treasurer of The Henry Pratt Co., Chicago, succeeding *A. C. Johnson*, who has retired.

Wilbur R. Greenwood, Jr., Joseph I. Morrow, and John A. Strother have been elected vice presidents of Pitney-Bowes, Inc., Stamford, Conn.

Robert Yeomans, general counsel for The Trane Co., LaCrosse, Wis., has been elected secretary of the firm.

S. A. Frazer, Jr., has been named office and personnel manager of the Georgia-Pacific Corp.'s general offices at Portland, Ore.

Ralph N. Pierce has been appointed to the marketing staff of Elrick and Lavidge, Inc., Chicago marketing, planning and research organization.

John J. O'Brien was recently elected a vice president of the Western Electric Co.

Books and Pamphlets

DEVELOPING EXECUTIVE SKILLS, edited by Harwood F. Merrill and Elizabeth Marting. 425 *pages. American Management Association, Inc., 1515 Broadway, New York 36. $9 non-members, $6 AMA members.*

Included in this book on new patterns for management growth are sample forms, complete index and bibliography, and a comprehensive view of new management principles

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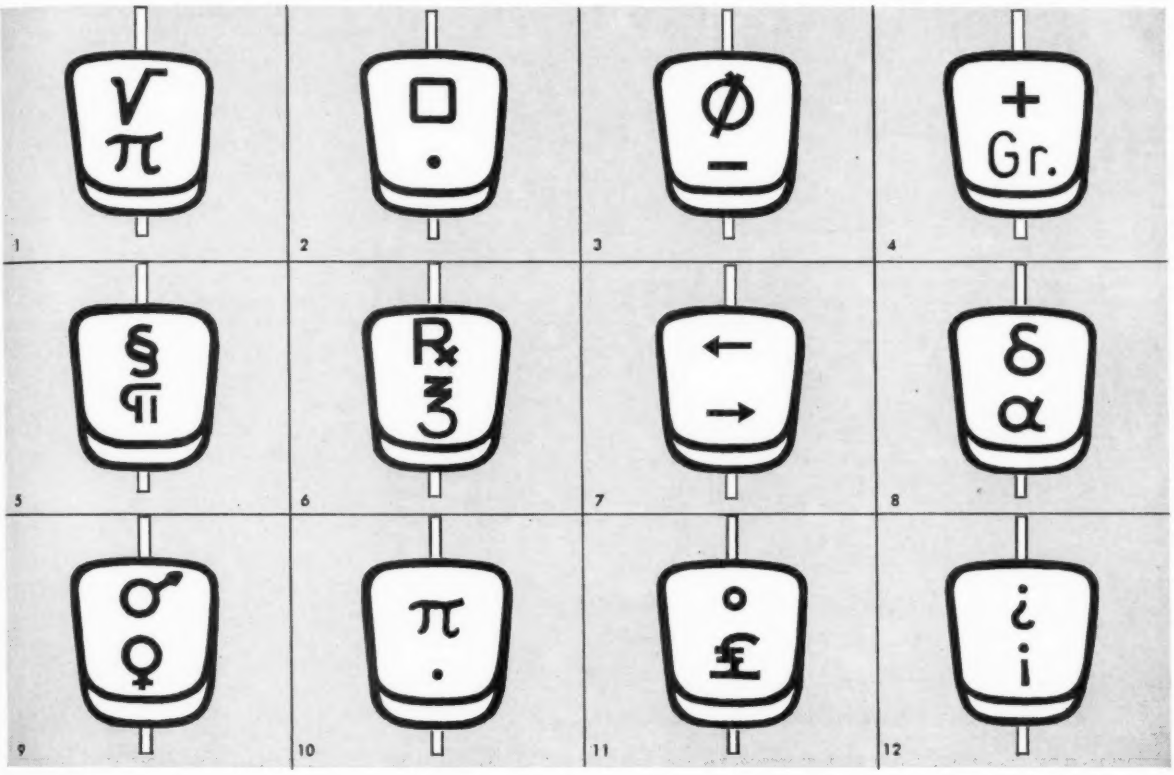

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- WHAT IS THE SIZE OF THE OFFICE EQUIPMENT MARKET—BY NUMBER OF OFFICE EMPLOYEES—BY SIZE OF OFFICE SPACE OCCUPIED—BY DIFFERENT TYPES OF BUSINESS OR INDUSTRY?

etc. etc. etc.

Full detailed information will be available on request to interested executives in about 30 days.

OFFICE MANAGEMENT

The Magazine for Management Executives

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under such headings as: Essentials of management development, tools and techniques, and a look at company experience. The book supplies essential data about management development in the form of numerous case histories, as well as descriptions of specific development methods such as coaching, job rotation, multiple management, the problem-solving conference, and role-playing. A few of the companies included in case studies are General Electric Co., International Harvester Co., Boeing Airplane Co., Radio Corp of America, H. J. Heinz Co., Columbia Records, The Goodyear Tire & Rubber Co., and Cities Service Refining Corp. Some of the specialists contributing material are Howard E. Clark, Harry Krieger, Joseph W. Shimp, Bernard J. Muller-Thym, Harold F. Smiddy, and Joseph M. Trickett. In general this book shows how to organize, carry through, and evaluate a management development program; how to deal with the special problems involved in management development; how to appraise personnel fairly and realistically, and how to select development techniques tailored to your individual requirements.

BUSINESS LAW: PRINCIPLES AND CASES, by John W. Wyatt and Madie B. Wyatt. 866 pages. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36. $7.50.

This book presents the principles of law with a supplement of selected cases, problems, and illustrations for clarification and explanation of those principles which depend heavily upon various factual situations. Subjects covered by the C. P. A., C. L. U. and C. P. C. U. examinations were a determining factor in the inclusion of the following topics: Contracts, agency, negotiable instruments, bailments, sales, partnership, corporations, security, real and personal property, wills and estates, trusts, and bankruptcy. Designed to explore the "fundamental principles of law which relate to the most common business transactions," the book also includes special topics such as wills and estates decedents, trusts, uniform negotiable instruments act, uniform sales act, and uniform partnership act. The most recent rules of law are also to be found in this volume. The authors are members of the Florida and Federal Bars.

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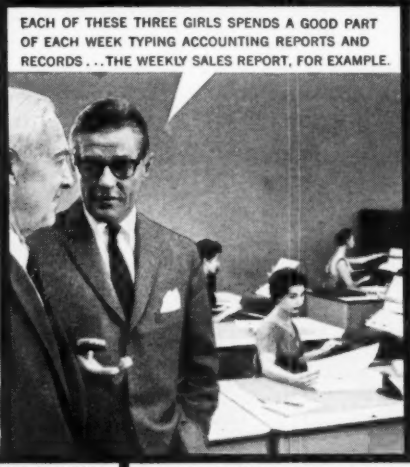
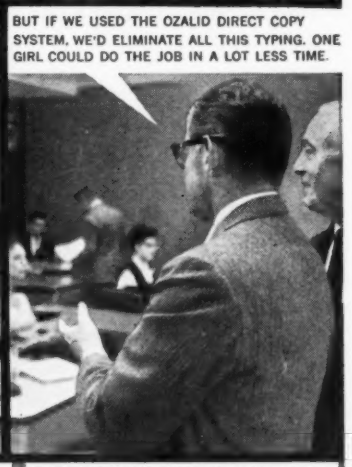

EACH OF THESE THREE GIRLS SPENDS A GOOD PART OF EACH WEEK TYPING ACCOUNTING REPORTS AND RECORDS...THE WEEKLY SALES REPORT, FOR EXAMPLE.



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I'M GLAD TO SEE WE'RE NOW GETTING THOSE REPORTS ON TIME.
YES. THEY'RE A LOT MORE ACCURATE, TOO. AND WE SAVE HOURS OF TYPING.

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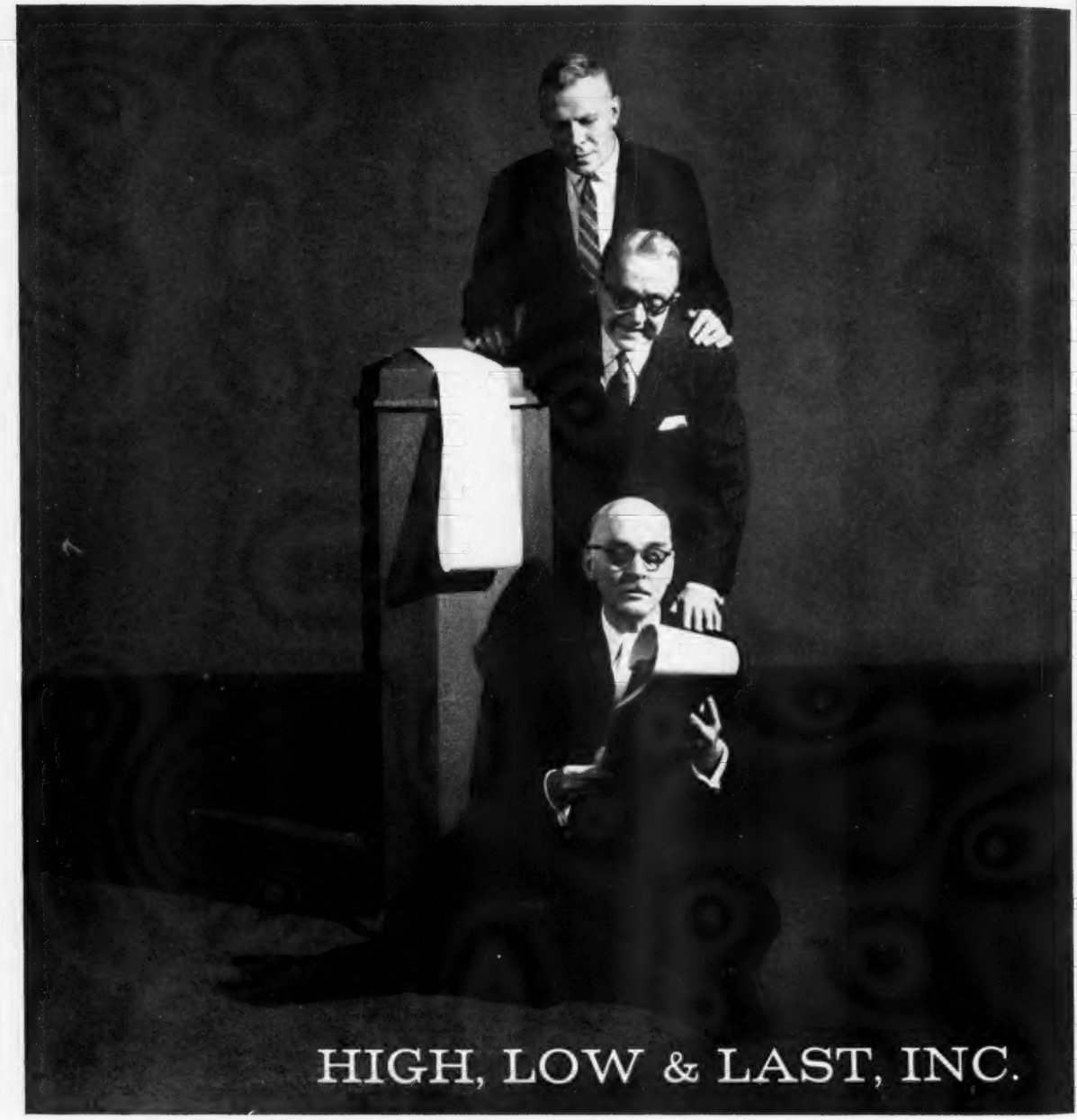

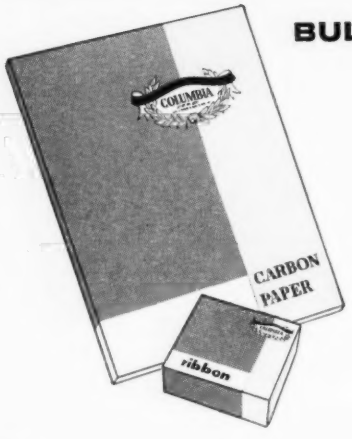

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Coming Events

NSA International Convention. Minneapolis, Minn., July 16-19.
Sponsor: National Secretaries Association (International).

Management Development Center 1958 Summer Conferences (12th Series). Pasadena, Calif. September 7-19.
Sponsor: Management Development Center, California Institute of Technology. *Place*: California Institute of Technology.

ISA 13th Annual Instrument-Automation Conference and Exhibit. Philadelphia, September 15-19.
Sponsor: Instrument Society of America. *Place*: Convention Hall.

NIGP 13th Annual Conference and Products Exhibit. Boston, October 5-8.
Sponsor: National Institute of Governmental Purchasing. *Place*: Hotel Statler.

SPA International Systems Meeting. Pittsburgh, October 13-15.
Sponsor: Systems & Procedures Association of America. *Place*: Penn Sheraton Hotel.

IMS 5th Annual International Meeting. Philadelphia, October 16-17.
Sponsor: Institute of Management Sciences. *Place*: Sheraton Hotel.

CIA Annual National Conference. Atlantic City, N. J., October 19-22.
Sponsor: The Controllers Institute of America. *Place*: Chalfonte-Haddon Hall Hotel.

NMA 35th National Conference. Los Angeles, October 23-25.
Sponsor: National Management Association. *Place*: Hotel Statler.

Cincinnati Office & Business Equipment Show. Cincinnati, October 28-30.
Sponsor: Cincinnati Office & Business Equipment Show, Inc. *Place*: Cincinnati Music Hall.

NMAA Electronic Business Systems Conference. Seattle, October 30-31.
Sponsor: National Machine Accountants Association. *Place*: Olympic Hotel.

FGAA 8th Annual Symposium, Washington, D. C., November 17-18.
Sponsor: Federal Government Accountants Association. *Place*: Shoreham Hotel.

with the EDITORS

WE'VE recently polled a cross section of our readership on their reactions to our annual Yearbook issue, published in March of this year, and we say to the many who responded, thanks for the kind words, and the valuable suggestions.

ONE of the questions we asked readers was which of the various sections into which the Yearbook was divided seemed most valuable to them. We distinguished between general review sections, such as "Automation," "Personnel", "Systems," and reference sections—"Tools of the Office," "Catalogs and Booklets," etc. The articles on Personnel were favorites in the first category, showing that people remain the most important—and perhaps the most bewildering factor in any office organization.

IN the reference section, "Tools of the Office" was the overwhelming favorite, and many readers volunteered the fact that they kept the Yearbook for the entire year as a reference volume, only discarding it with the publication of the next issue.

ALL in all, a response which has pleased and flattered us very much, as well as giving us many new ideas which we'll incorporate in the 1959 issue.

THE distinct interest in Personnel as shown by the readers' response would seem to indicate that even with an easing labor market, problems of selecting, training, and maintaining the best possible staff remain a major office concern. As we've pointed out before, the easing of the labor market, should bring about some distinct changes in the entire clerical picture. Presumably more good people will be available than has always been the case in the past, and presumably too, there will be less turnover. This would seem to be definitely indicated whether or not the recovery is spectacular or slow, because of the increasing number of people who will be coming of work age in the next few years, and also because of another trend, reported again by Dr. Gabriel Hauge, the President's financial advisor. In his recent predictions concerning the country's economic future, he pointed out that there would probably be a continuing increase in the proportion of the work force in the service industries as compared with those in basic manufacturing. In other words, increasing mechanization on the production line will make manpower relatively less important there, in comparison with other fields of employment. So there should be more candidates proportionately from the labor force for office jobs, and more people preparing themselves for office work.

ALL of which will mean that the emphasis on personnel will be important for a long time yet. For if good people become more readily available as seems inevitable, there will have to be many revisions made in job assignments and responsibilities. This will be true particularly in larger offices which, faced with a personnel shortage for so many years, have often had to reduce the scope of each job in order to make use of relatively untrained workers, whose term with the company would be relatively short. With personnel more readily available, a lessening of turnover can be expected, and therefore more training and indoctrination would be valuable, since "career" employees could handle a wider range of responsibilities. Indeed, the wisest company may be the one that makes every effort from now on to make each of its jobs, even at the beginning levels, as stimulating and as responsible, as possible, instead of working to make each as simple as possible. Good people are going to be available in larger quantities than they have been for some time. Interesting jobs with some degree of responsibility—even if they are difficult jobs— will attract the best of them.

Robert M Smith
Editor

HEADQUARTERS OF C. S. Hammond and Co., in Maplewood, N. J.

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Business indicators emphasize need for continuing cost control in office

Possible continuing consumer resistance to replacement of major items, and drop in marriage and birth rate could compromise scope of recovery from present recession—

by Robert M. Smith

THE OFFICE, like every other part of the body economic at mid-point, 1958, faces problems not peculiar to itself, but rather problems that stem from the situation plaguing the entire business picture—the central fact that the recession, which has been with us now since fall of last year, seems to be a more permanent feature than anyone ever anticipated it would be.

True, at the moment there are a number of hopeful signs. Unemployment has shown a drop for two successive months, although now that students are moving into the market it will undoubtedly rise again. Some other significant economic signposts indicate overall improvement. But to counterbalance encouraging factors, there are many indications that the best we can hope for for some time is a state of equilibrium, rather than a return to the boom conditions, to which we had grown more or less accustomed.

Furthermore, even more serious is the fact that there are some indications that the boom we have been living under was more of an isolated phenomenon than anyone recognized and that many of the predictions concerning the future, have been more optimistic than accurate.

In other words, it is perfectly possible that the state of recovery achieved will represent equilibrium—but at a lower economic level than anyone has been used to for a long time.

Two central facts stand out in this possible situation, two central assumptions which have been almost automatic in all business predictions about the future, and which are just now beginning to show some startling—and perhaps fatal flaws.

The first assumption was that planned obsolesence would work, that it would be possible indefinitely to sell people appliances they really didn't need simply because the units were a little newer, were styled a little differently from the appliances being replaced. It worked for a while, and if there hadn't been economic trouble it might have worked a little longer than it did. But it is becoming obvious now that, as a long-term operating and production theory, it was wrong. People who already have one television set may be persuaded to buy a second, and even a third, provided the family is large enough, and its tastes and interests vary widely enough. But it seems to be increasingly obvious that, after having sold one family three sets, you can't talk them into replacing those three sets each year, or each three years, or each five years.

With automobiles, the picture is a

In fields where "replacement resistance" is firm, research activities leading to decisive product improvements, may prove solution

little bit different, but not too different. Automobiles do deteriorate much faster than other durable goods, but they don't deteriorate as quickly as automobile plants are geared to replace them. They don't have to be turned in every year for a new model under normal circumstances. And once an artificially induced prestige factor that makes it the thing to do to replace one's car each year has been replaced by an equally artificial, but not induced, prestige factor where it's much smarter to run a car a year or two old than it is to sport a new one, a major industry, which had geared itself to produce according to a premise since proved false, is in trouble.

And there seems to be little doubt that the whole theory that people would calmly accept planned obsolescence, the scrapping of appliances or machines that were still perfectly serviceable because newer models had been brought out, is as weighty a mistaken assumption as American business has ever made.

Why then did this theory "work" as long as it did? How was it possible to sell the millions upon millions of new units that were sold in the middle 'fifties if the theory of producing replacements for durable goods units that didn't really need replacement wasn't sound?

As succinct an answer as any was given by Cloud Wampler, president of the Carrier Corporation, at the recent American Management Association Economic Mobilization Conference in New York. Said Mr. Wampler:

"Let us not lose sight of the fact that numerous segments of American industry supplied in 12 years—or maybe even less—the demand of 18 years. And it was this that caused so many of us to believe that pie would actually grow in the skies. Therefore, a great deal of new productive capacity was provided, and the total was more than was actually needed to supply normal demand. The result was inevitable, and in the eighteenth year of the period I am now discussing, that is, 1957—the good old-fashioned law of supply and demand began to catch up with us. So here we are with a case of indigestion that is pretty painful."

It seems pretty clear, in other words, that many industries may have mistaken a vast market that was a result of pent-up demand unsatisfied for years for a vast market that would hold at high levels of demand indefinitely. And in making the bet it did, industry was mistaken. Once the slack had been taken up, the demand eased off to normal levels, although the industrial plant had been geared for years to meeting abnormal levels. The resulting set-back drove demand levels below normal as people grew more cautious about buying—especially since people, having satisfied most of the demands that they had accumulated, really were under no real pressure to buy.

The current recession has often been called an inventory recession. Perhaps it is that in an even more significant sense than is generally assumed. For if business has been living on its inventory, so has the consumer. He has the things he thinks he needs, and they work. He doesn't need to replace them, or at least he doesn't need to replace them at the same rate at which he needed to add them after long years when he couldn't get many of the things he needed. He can last very well on his present stock of belongings.

The marriage rate, counted on for business expansion, is dropping

This is one aspect of the current economic situation which is assuming larger and larger importance as the indicators begin to show a slight upturn. The country has had a scare. That scare has accelerated the drop in sales which perhaps began in the first place because people finally felt that they really had reached the point where they had just about as many goods as they needed.

That is one major factor which may imply our recovery will take the form of a long period of business activity at a level much closer to that of the late fall of 1957 than that of the spring of 1957.

Another factor concerns an assumption which has been almost an article of faith for some years, but which is being seriously questioned now for the first time.

It is an assumption that is still being made by many companies, and by many authorities, as though forecasting the future were as exact a science as recalling the past. The only difficulty is that those who question the validity of the assumption are a little closer to current statistics in their field, than those who base their plans on the assumption.

And the assumption in question is that a continually rising marriage and birth rate will open a vast new market for all types of products needed by young families during the decade 1960-1970. The assumption was based on projections from the recently rising birth rate over the next several years, and the increasing number of people coming of marriageable age in the near future.

But the fact is that right now the marriage rate is dropping sharply, and some major flaws have been pointed out in the theory that would have made it a little less than perfect even if the marriage rate had held steady. Major point here is that one of the reasons for the phenomenal rise in the marriage rate over the past few years has been the wave of wartime marriages including those during the Korean conflict and the fact that prosperity and changing standards have led to a continual lowering of the marriage age. But the second factor is obviously one that has its limits, and they seem to have been pretty generally reached. As a matter of fact, with recession the trend if anything is reversing: marriage rates as a whole are going down, and they are dropping most sharply in the youngest age groups, since they are the groups most seriously hit by recession.

Although there are as yet few figures to prove it, the same economic factors

which have led to a drop in the marriage rate would seem to point almost inevitably to an overall drop in the birthrate, both absolutely in terms of fewer marriages, and relatively in terms of lower birth rate among married couples.

So the vast increase in formation of new households and in population so confidently expected in the 60's as the post-1929 depression babies come of age is questionable, at least in terms of dimensions, on two fronts: the impossibility of the marriage age dropping much lower, and the very strong possibility that prolonged mild recession—or even a recovery that falls short of the boom we have had for the past several years—will cut both the marriage rate, and number of children per family unit.

What would this do to the long term predictions of American business? No one can say for certain, but the acceptance of a constantly increasing population as an article of faith has been a major cornerstone of business planning for some time. As recently as the same Economic Mobilization Conference at which Carrier's Cloud Wampler pointed out that perhaps production facilities had been much overexpanded during the post-war period, Sinclair Weeks, Secretary of Commerce, assured the audience:

"Here are some statistics which I have gathered that project great growth. They anticipate a market that should inspire the confidence of every businessman.

"I have set them up on a ten-year series: 1948—now—and 1968.

	1948	Now	1968
Population (millions)	146.6	173.0	205.5
Households (millions)	40.5	50.4	60.3

Those figures, if accurate, do predict an ever-expanding market. But according to the experts quoted in *Business Week*, such predictions are at least questionable. For, granted we have had a vast population and marriage increase since 1948, if we are now heading into a "population trough," it seems extremely dubious that the absolute increase in population during the next ten years will exceed the increase during the last ten. It not only seems dubious; it seems almost impossible.

What does all this mean in terms of the office?

(*To page 71*)

The intelligent company will analyze its product and market in terms of relative elasticity in planning cost control

NOMA concludes 39th International Conference in Chicago

Members of NOMA convention take part in traditional opening day ceremonies at business show.

Wilbert E. Scheer (right) is seen holding award for delivering best paper before NOMA chapters during year as F. G. MacIlroy, past international president (left), and W. M. Alexander, chairman of the Coleman L. Maze Awards Committee, look on.

Conference sessions built on triple theme: self-improvement, human relations, performance—

ELECTION of a slate of new officers, technical sessions covering philosophy of management, effective employee communications, executive self-improvement, and a panel discussion covering "The White Collar Worker in Today's Economy," were major events at the 39th International Conference of the National Office Management Association, held in Chicago, May 25-28, at the Conrad Hilton Hotel.

A concurrent business show was held May 26-28.

Elected as International officers for the coming year at the convention's opening business meeting on Monday, May 26, were:

Fred A. Shultz, assistant secretary, Unity Mutual Life Insurance Co. of New York, Syracuse, N.Y., *President.*

Walter Emmerling, manager of General Office Services Department, Procter & Gamble Co., Cincinnati, Ohio, *First Vice President.*

A. E. Riddle, director of Office Administration, Colgate-Palmolive Co., New York; J. H. Quaritius, vice president and director, Peninsular Life Insurance Co., Jacksonville, Fla.; and R. B. Hodges, planning manager, Denison Mfg. Co., Framingham, Mass., *Vice Presidents.*

Directors elected were: Area 1, Lawrence Allen, Sylvania Electric Products, Salem, Mass.; Area 2, W. S. Foster, Dictaphone Corp., White Plains, N. Y.; Area 3, Arthur S. Patrick, University of Maryland, College Park, Md.; Area 4, J. W. Gawthorp, Pilot Life Insurance Co., Greensboro, N. C.; Area 5, Elmer C. Humes, Neisner Bros., Inc., Rochester, N. Y.; Area 8, J. F. Hollerbaugh, International Minerals and Chemical Corp., Bartow, Fla.; Area 10, H. S. Bohannon, Briggs-Weaver Machinery Co., Dallas,

Texas; and Frank G. MacIlroy.

Mr. MacIlroy, immediate past president of NOMA, is a vice president of Western Employers' Service, San Francisco.

W. H. Evans, of the NOMA national office in Willow Grove, Pa., was re-elected Executive Vice President, Secretary and Treasurer.

Social events at the conference included the Chapter Presidents' Dinner on Sunday evening, May 25; the annual banquet on Tuesday evening, May 27; and the annual luncheon on Wednesday, concluding event of the conference.

Technical sessions this year were built around a three-fold theme in executive development: personal improvement, human relations insight, and on-the-job performance.

First technical session of the conference on Monday afternoon was handled by Jeff Coats, of Akron, Pennsylvania, a management consultant on personnel development, who spoke on "Self Improvement." Everyone works in "cycles of elation and depression" he told the audience, so that at some periods work output is high, at other periods relatively low. Self-understanding and insight can spread out the span of the cycle from a norm of about 23 days to periods of six months to a year, Mr. Coats continued, so that high productive periods are maintained for much longer times than they are during the normal span.

He recommended "looking within" for thirty minutes each day—a period of reflection and analysis of one's own abilities, shortcomings, and progress.

In terms of achieving better communications with employees, colleagues, and superiors, he advised his hearers to develop the ability to listen, and to avoid arguments by asking a series of leading questions which draw the other person to the desired conclusion.

"If we talk more than fifty per cent of the time in our communications with others, we are not good listeners," he told the group.

He also touched on the potential teaching tool embodied in "sleep learning," and said that experiments had shown that people of average ability could deliver quite long speeches which had been recorded and then played to them continuously while they were sleeping. Although there was no conscious memorization of the speech, the subconscious retained the exact text so that it could be delivered verbatim after two nights of such sleep learning, he reported.

Fred A. Schultz, newly elected international president of NOMA

Dr. Cylvia Sorkin, St. Louis management consultant, and the second Monday afternoon speaker, posed the question, "Are You Normal?" as the theme of her talk.

Many of the tensions and frustrations that exist among executives, she told the NOMA group, stem from simply attempting to do more than can be managed.

"Don't bite off more than you can chew," she advised. "Frustration is simply attempting and failing."

If goals were kept within reason, most of the strains that harass today's executive would disappear rapidly, she continued. And it is important to relieve tensions as much as possible at work, because the entire tempo of life today produces so many pressures on human beings.

"Fatigue is chronic today," Dr. Sorkin pointed out. "The whole pace of life leads to it, the trend toward suburban living increases it, the attempt to do more work than the body is capable of carrying adds its share to the burden."

Developing the "human relations" phase of the overall theme was a panel of four speakers who appeared on Wednesday morning to discuss the "White Collar Worker in Today's Economy." Members of the panel were H. L. Wylie, Professor of Industrial Management, Northwestern University and Assistant Secretary-Treasurer, The Pure Oil Co., Chicago; Harry B. Clayton, of John A. Patton, Management Engineers, Inc., Chicago; John R. Crowley, Systems and Procedures Department, Hotpoint Co., Chicago; and Joseph T. Meek, president, Illinois Retail Merchants Association, Chicago.

There is a greater interest in clerical

(*To page* 74)

Desk-sized computer at First National City Bank is controlled by "pinboard program"

Part 2—

Why small companies may need automation even more than larger concerns

This series, which started in the June issue of *Office Management,* described the experiences of an extremely small office and the office of a medium sized company to illustrate the principle stated by the article: that the usefulness of "first level automation" —use of machines to carry out a whole sequence of traditional clerical tasks without human intervention or control—is best determined on the basis of company operations rather than of company size. A very small company which may have to deal with thousands of "bits" of information may find a high degree of mechanization much more useful and much more economical than a much larger company which has fewer pieces of information to process.

The illustrations used in the first article concerned a Roman Catholic charitable office with six clerical workers in San Francisco, and a medium-sized manufacturing company in Oklahoma City, each of which had to handle and reconcile a heavy load of "pieces of information," and each of which found it economical to employ a high degree of mechanization to smooth work flow.

The point was also made in the first article that any company which has "to reconcile many varying streams of information, each of which involves many different figures, for day-to-day operating information, which it must have quickly," is also a logical candidate for a high degree of mechanization. And this was defined as the area where "first level automation"—the assumption by machines of traditional

clerical routines without any really significant changes in the routines carried through, or the end results of those routines began to give way to "second level automation"

In this phase of automation, machines would not be used only to produce the company's customary papers, perform the company's customary processing sequences at higher speeds. Instead the machine would be used to achieve the final operating information, replacing the intermediate levels of reports and analyses by its own internal calculations, syntheses, and summarizations.

It is in this area that the electronic computer reigns supreme, is absolutely distinguished from all other, simpler machines. It is here that its tremendous memory capacity, its high speed, and its ability to carry out a long sequence of instructions according to program, give it such large advantages over all other machines that the computer becomes, in effect, entirely different from all other machines. Because of its memory capacity, and its ability to carry out a complicated and detailed program, it is possible for a computer to start with various streams of basic information, after they have been put in the proper form for computer input, and interanlly process those figures, including all the steps of reconciliation, computation, summarization, into the top management reports that are conventionally achieved only after a whole series of manual steps—that are based so to speak on a whole pyramid of other papers, reports, forms, analyses.

And it can perform the whole process so much faster than is possible by ordinary means that not only is day-to-day operating information available more quickly than ever before, but information never before possible to achieve, because of the time involved in computation, can be sought and found.

The instance of the government economist, working with the aid of the computers in the Bureau of the Census, is a perfect example. At a time when the country's leading economists disagreed about exactly what was happening, whether a recession was actually in the making or not, he was able to process a greater mass of figures in a shorter period of time than had ever before been possible in establishing a picture of an economic trend. And his results, as subsequent events have shown, were accurate even though failure to give them full credit at the time may have prevented fast enough remedial action to halt or slow the downturn. If full credence had been given to the economic prospect indicated by the computers, the present business picture across the country might be very different.

These are the most important contributions the computer has to make to the business scene.

Its ability to eliminate whole manual sequences and their results and achieve final streamlined reports without the mass of intervening papers that now separate basic information from final management operating information.

Its ability to weigh a whole mass of indicative figures, and synthesize them into a meaningful interpretation fast enough for action to be taken to meet the situation revealed by the figures.

And it is exactly here that American business—and to a degree American manufacturers of electronic equipment are guilty of not making this point clear enough to businessmen—has failed to understand and make proper use of the computer. Too much emphasis has been put on its ability to produce conventional products faster than is possible with conventional methods—an ability which is not restricted to the computer, and is of little interest to businesses which do not need such fast processing of great quantities of figures.

But every business, in a fluid and competitive market, can benefit from the summarizing and predicting abilities of the electronic data processor. And if the small units now being produced live up to their advance notices, most medium and even small concerns will be able to afford a unit of some type in the near future.

A conventonal machine program

Two of machine accounting's greatest advantages—its ability to compute myriad arithmetical operations rapidly

Pin positions are checked by two members of bank's loan department

and accurately, and its ability to sort and re-sort information into dozens of different combinations—have shown themselves to be particularly useful in revenue work.

The heavy burden which this type of work throws upon accounting employees is inherent in the mode of operation of the typical oil producing company, and the problem is especially burdensome on companies like Midwest Oil Corporation, of Denver, Col., which have a relatively small number of accounting personnel to process the thousands of oil and gas settlements received monthly. Extreme diversification of ownership and interests which has on the one hand enabled companies to reduce the risk of exploration and wildcatting in a highly hazardous industry, has on the other hand resulted in the division of the income pie into dozens of fractional bits and pieces. When the purchaser settles for gas and oil purchased by him, a major exercise in division is necessary, and at the payee's end, a similar task must be accomplished — breaking the check down into its components and allocating income to investment units. The company must calculate the net share of the production, gross value, taxes, and check the net amount which the purchaser has paid. These net figures must be recorded in some manner, so that the distribution of the net figures can be summarized.

Today, Midwest receives from 1,000 to 1,200 checks per month covering settlements under as many as 7,000 separate division orders. A great majority of these settlements are related to royalty holdings, and interests are frequently divided into fractional shares so small that one party's interest in a month's production may total but a few cents. Splitting each owner's share may require computations using fractions running from five to seven decimal places.

Although Midwest Oil Corporation was organized in 1951, its predecessor companies had roots beginning back in 1911. A merger brought together the Midwest Oil Company, Mountain Producers Corporation, and Saltmount Oil Company. Producing properties are located in some 15 states with the most substantial production coming from Texas, Wyoming, Oklahoma, and Louisiana. Salt Creed Field in Natrona County, Wyoming, has from the beginning been Midwest's most important producing property, and until the formation of Saltmount in 1929 was its only production. The field was unitized in 1939 by setting up two units—the Light Oil Unit and the Tensleep Unit. The Company's share of production in the Light Unit exceeds 1½ million barrels annually, while its net production of black oil from the Tensleep Unit is more than a half million barrels per year. Average daily production in 1956 from all leases and royalties was running around 15,000 barrels per day. This was being converted into income through the medium of the previously mentioned 1,000 to 1,200 checks per month.

Operator enters fresh information at desk computer after which machine takes over all computations, following programmed instructions

Machines replace manual methods

Accompanying each check as it comes from the purchaser is a statement, which may take one of several different forms, but which in every case must be further processed in the Accounting Department before proper distribution can be made. The statement, which is commonly referred to as a pipeline run statement or a gas production statement, shows generally the lease reference number or name, the 100 per cent production in barrels or MCF or sometimes gallons, the 100 per cent gross value, the 100 per cent production and severance tax, and Midwest's net amount. The company must convert these to figures that relate to its share; that is, it must multiply them by its interest in order to arrive at its share of production, value, and taxes.

Today, the processing of these statements is handled by IBM Accounting Machines, whereas before January 1955, clerks working with desk calculators performed the arithmetic. The

(*To page* 61)

Mr. Eisenhower, who flew in from his Pennsylvania farm, is welcomed on his arrival at the Hotel Astor

Economic Mobilization Conference sounds optimistic note

Eisenhower, Nixon and Weeks voice Administration's confidence in nation's economic future; top management executives outline moves taken to speed recovery—

"AMERICA is not going to stand still. America is going to grow—and grow and grow."

With this note of optimism, President Eisenhower entered into the heart of his recent "state of the union" message on economic recovery before a gathering of 2600 business leaders at the Hotel Astor in New York. In encouraging the nation at large to gather all its forces for a new offensive to promote an early upturn and renewed economic growth, the President declared:

"The question that faces us today is not whether America is going to grow and make progress, but how quickly our economy is going to resume its full and healthy advance." Later in his address, Mr. Eisenhower enumerated growth factors which indicate a future "bursting with vitality and promise." The question in the future, he said, will be "not one of surmount-

(*To page* 28)

Vice President Nixon, who spoke at the conference, chats with Don G. Mitchell (extreme left), AMA President Appley and J. Erik Jonsson

Among the speakers—

Thomas J. Watson, Jr.
International Business Machines

Sinclair Weeks
Secretary of Commerce

ing our problems—but one of rising to our opportunities."

The President's speech concluded the two-day Economic Mobilization Conference, conducted on May 19 and 20 by the American Management Association at the Astor. Other featured speakers included Vice President Nixon, Secretary of Commerce Weeks, and the board chairman or presidents of 11 leading American companies. Five other top-echelon businessmen acted as chairmen or associate chairmen during the four Conference sessions. The purpose of the Conference, according to AMA, was to indicate how American management teams are mobilizing their resources to meet the challenge of the current economic "situation" through private initiative. Most of the speakers expressed confidence that the recession was showing signs of leveling off, and all detailed recent moves undertaken by their companies to assure a return to a healthy economy.

Mr. Eisenhower, who flew to New York from Harrisburg, Pa., for the conference was introduced by Mr. Nixon. To date, the President said, "reports from the country strongly indicate that the economic decline of recent months is slowing down. Not all our economic troubles are over by any means. But there is a change in the making. That it will prove to be a change for the better, I have no doubt."

The job of recovery, he said, is a joint effort in which leaders of business, labor, farming and the professions, the consumer and the government all play a part. "Government," he added, "while it cannot guarantee prosperity, has a continuing responsibility in times like these to use its powers to help counteract recession. It has a duty to alleviate human hardship and protect our human resources, to help promote an upturn in production and employment, and to help build a solid foundation for long-term growth."

"Record of action" reviewed

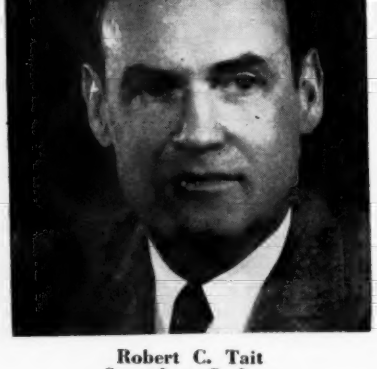
He reviewed the government's "record of action" in helping to counter the recession and foster recovery:

"First, the independent Federal Reserve System has increased the availability of credit and has helped reduce its cost to borrowers.

"Second, a series of actions starting last August has been taken to promote private housing construction and to step up activity in such fields as urban renewal and college housing.

"Third, measures have been taken toward accelerating approved public construction in many categories, such as Post Office modernization . . ." . . . (At this point, Mr. Eisenhower stressed his determination "not to get bogged down in a slow-starting, emergency public works program, which would provide a minimum of jobs now and a maximum of budgetary headaches in the years ahead.")

"Fourth, steps have been taken to accelerate markedly procurement for



Robert C. Tait
Stromberg-Carlson

Don G. Mitchell
Sylvania Electric Products

Frederick R. Kappel
American Telephone & Telegraph

Second day's executive panel assembles for question and answer period

needed defense and civilian requirements.

"Fifth, recommendations have been made to Congress to deal with special problems [such as Mr. Eisenhower's proposal to extend, temporarily, unemployment benefits]."

Future tax reductions are possible

Concerning the "intense interest," both in and out of government, in possible tax reductions, the President said that the timing of any change in tax rates or laws always poses problems. "After consultation with Congressional leaders, certain decisions will shortly be taken in the field of taxation. They will be made in the light of the latest information regarding the economic situation, and with a full evaluation of the probable short- and long-range consequences." (As this article is written, Mr. Eisenhower requested Congress to continue corporation and excise taxes at existing levels for another year. The present law covering these taxes expires June 30.)

In earlier speeches, both government leaders and business executives discussed moves underway to speed up recovery of economic ills. Emphasizing the Administration's belief that business, rather than government, must play the leading role in restoring full employment and economic growth, Secretary Weeks said he expected the GNP (gross national product) to reach $600 billion by 1968. The present annual rate is $416 billion. He also forecast a rise in employed workers from the present 66,700,000 to 80,500,000 by 1968, and that annual per capita income would increase from $1931 to $2310. Mr. Weeks termed businessmen "the nation's chief hope for steady, sound recovery," and described the government's function as that of "stepping-stone" and not of "stumbling block."

Following Secretary Weeks, who opened the Conference, was a panel of top industrialists, including Harry A. Bullis, chairman of the board, General Mills, Inc., Minneapolis; Robert S. Ingersoll, president of Borg-Warner Corp., Chicago; Thomas B. McCabe, president of Scott Paper Co., Chester, Pa.; Cloud Wampler, chairman of the board, Carrier Corp., Syracuse, and Thomas J. Watson, Jr., president of International Business Machines Corp., New York. Chairman and associate chairman for the session were J. Erik Jonsson, president of Texas Instruments, Inc., Dallas, and Robert C. Tait, president of Stromberg-Carlson Co., Rochester, respectively.

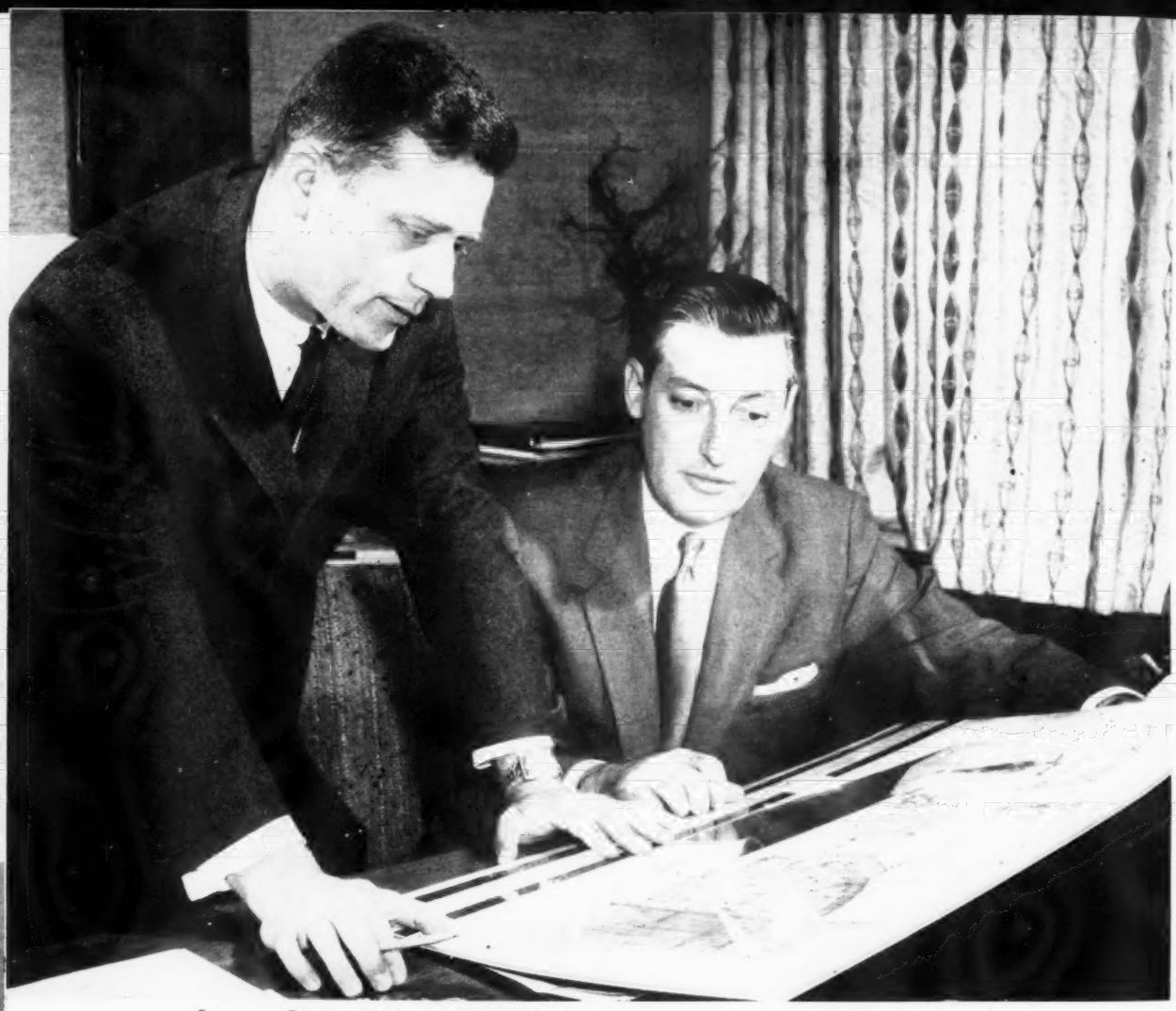
Almost all said they were devoting more attention to research and development—to "broaden the base of the market with new products," in Mr. Bullis' words. General Mills, he added, introduced 12 new packaged products during the past fiscal year, which ended May 31. (*To page* 68)

Charles H. Percy
Bell & Howell

Cloud Wampler
Carrier Corp.

Top management's recipe for recovery—

- **Stimulates sales by providing better values—**
- **More extensive cost control is vital—**
- **Sales approaches must be revitalized—"Let's all sell smarter and harder—"**
- **Where possible, reduce prices to build volume—**
- **Research and development must continue—**



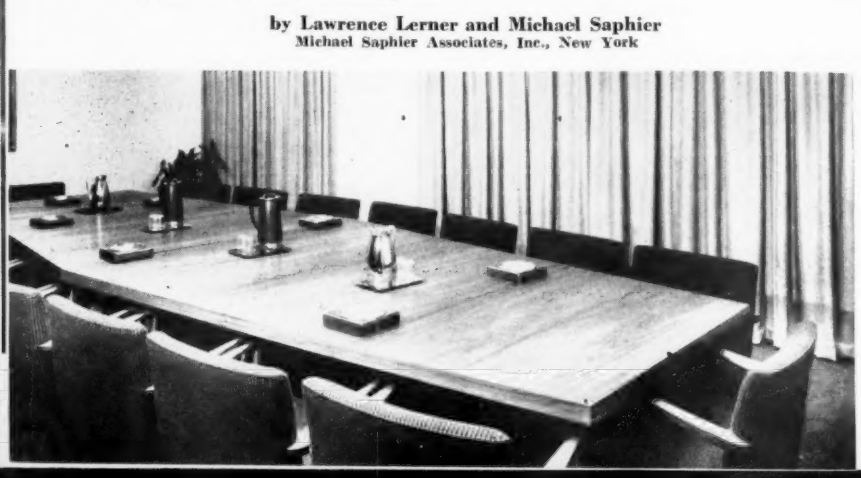
Lawrence Lerner (left) and Michael Saphier discuss plans for modern office accommodations

Why space planning and design are vital to a company's growth

Nowadays, such factors as work studies, market analysis and economic forecasts play an important role in creating the efficient, modern office—

by Lawrence Lerner and Michael Saphier
Michael Saphier Associates, Inc., New York

NEW AND SIGNIFICANT developments in space planning and design, serving the American office, the focal point for business leadership, are making unique contributions to better office management. From modest beginnings in the postwar years, these developments have grown and spread throughout the country. Today they are an accepted element in the management picture, aiding the growth of the modern office as a center for efficient direction of productive enterprises. Moreover, results to date indi-



Board room at Warner Bros. exemplifies flexible use of space and comfort achieved by tasteful furnishings

cate that space planning and design will go on making the office a still more dynamic force for business accomplishment tomorrow.

These developments are two-fold: space studies, to determine accurately overall needs; and design, to translate space into practical and pleasing surroundings. The first service determines the total square footage required to house modern office management, not only for today's needs but for years ahead; the second service utilizes the design talents of the professional space planner to create the office best suited to management's requirements.

Future growth planned for

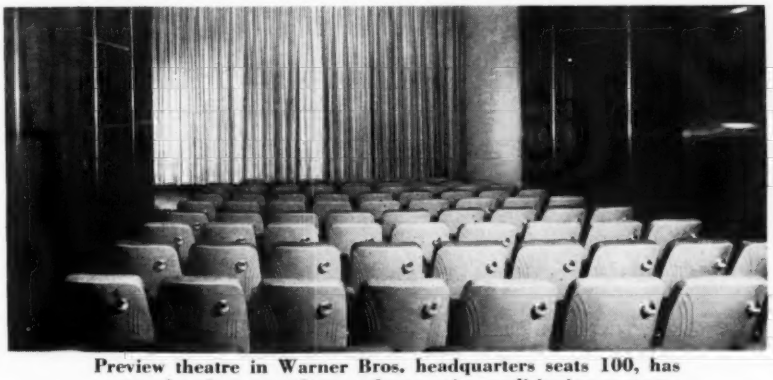
Space needs are determined realistically through work studies, market analysis and economic forecasts. It is possible to accurately plan future growth for many years ahead. Having established with the company anticipated future needs, the space planner than translates space analysis into design adapted to individual office functions, from board room to "bull pen" as the job requires.

Based on a thorough study and projection of petroleum sales in a five-state area and the District of Columbia, the new divisional office building of Gulf Oil Corporation in Philadelphia is designed to meet Gulf's regional office requirements for the next quarter-century. It can accommodate nearly double the present work force through the basic module of office layout and operation, which can be condensed without impairing office efficiency.

After projecting with the company personnel the market for petroleum products in this region and Gulf's share of the market, we determined how much office space Gulf would need in its divisional headquarters to handle the volume of business. Then we recommended office layouts that would permit all departments to operate most efficiently. This called for a horizontal operation in a four-story

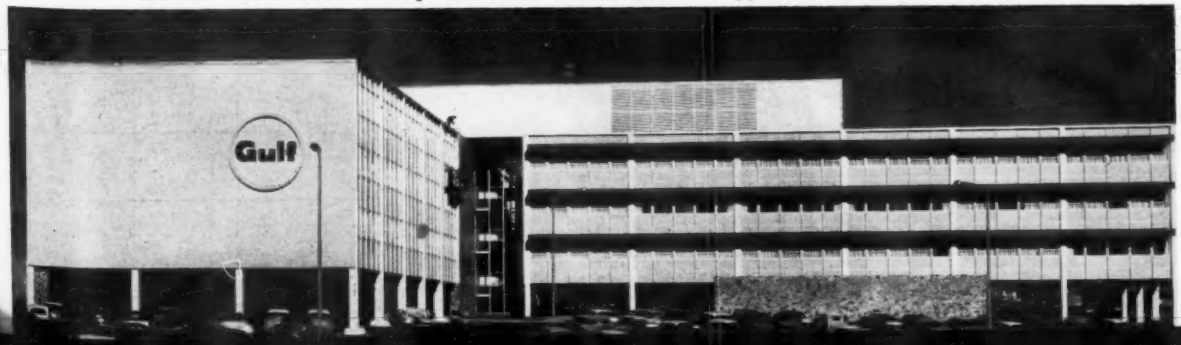
(*To page* 64)

Interchurch Center to house various religious sects planned by Michael Saphier Associates will be built in New York City



Preview theatre in Warner Bros. headquarters seats 100, has natural walnut paneling and own air conditioning system

Exterior view of Gulf Oil Corp. reflects the efficient planning typical of the building's interior



Let's be realistic, not rigid, in setting job requirements and salary scales

Too great a dependence on arbitrary "general" job classifications, and adherence to suggested salary scales can be self-defeating, as well as expensive—

by Raymond Dreyfack

THERE IS, in all probability, included among the files of your personnel department or controller's office a comprehensive schedule of wage levels to cover every job classification in the office. In fact, there are probably several schedules showing various salary breakdowns by geography, industry, age, sex, etc. Listed on these schedules is everything from office boy or filing clerk to high supervisory and management classifications.

Indisputably these lists are wonderful guides to management in comparing existing wage structures and policies of the company with salary practices prevalent in the area, industry and nation. However, in many specific instances it is highly inadvisable to use such statistics as a wage classification bible, or as a primary consideration in determining the salary evaluation of a particular job. This becomes increasingly true when the pay rate under consideration applies to supervisory personnel.

Each supervisory job must be considered and evaluated on its own merits independently of statistical findings and compilations. In one firm, for example, the functions of the office manager may be of so routine and clearly limited a nature that quite apparently a "heavy" would not be indicated to fill the spot. In the next office, however, the same title position may call for a certified public accountant with heavy manufacturing experience. Understandably the wage classifications of the two jobs would vary considerably.

The more involved the job requirements, the more important it is to review carefully the detailed aspects of the duties. This cannot be determined from general type schedules or wage classification aids. Size of the company, number of people being supervised, training programs in progress, types of operation involved, volume and complexity of transactions, number of subsidiary or branch operations, planning responsibilities—these are but a few of the factors to consider in determining the rate of pay for a given supervisory job. Where experience required is apparently light and routine no great problem is presented.

"Underselling" can be dangerous

On the other hand, where transactions are voluminous and complex—and this would apply to most offices hiring upwards of twenty people—then a detailed breakdown of duties must be made to determine exactly what calibre individual is needed for the job, and what his compensation should be. If a complex supervisory job is classified on such a generalized basis that we attempt to place an eight thousand dollar man in a six thousand dollar category, we are underselling our supervision—and this can be dangerous.

Oh, we'll get our six thousand dollar man, all right. But let's take a hypothetical firm and discuss the hiring of, let us say, a tabulating supervisor, in order to point out the pitfalls of such a procedure. Company X is a medium-size manufacturer of clothing accessories. Scheduled for delivery in four months is an installation of punched card equipment which will cost approximately three thousand dollars per month (on a rental basis).

Now, eavesdropping is not a very honorable pastime. However, in the interests of "disseminating information" let's make an exception this time and put our ears to the keyhole of the door to the controller's office. Seated comfortably therein are the controller and the personnel director. They are discussing an employment interview just completed during which they hired a man to take over the newly created job of tabulating supervisor. It will be the function of this man to set up the punched card installation in accordance with the concepts originated by management and the equipment manufacturer.

Controller: Well, Joe, what do you think of him?

Personnel Director: (shrugging) I think we did right in hiring him, Al. Seems to have a fair background. I guess he knows what he's talking about.

Controller: Frankly, Joe, I'd have felt a little more secure with that other fellow we saw this morning.

Personnel Director: No doubt about it. He was a real go-getter. But he would have cost us twenty a week more.

Controller: (somewhat ruefully) Well, I certainly couldn't buy that. I'm the one who set up this budget in the first place, remember.

Personnel Director: (smiling nervously) As if you'd ever let me forget! Oh, well, this lad will probably work out all right.

Well, let's leave the keyhole at this point and pick it up from there. ".... this lad will probably work out all right," the personnel director said. The word, "probably" indicates from the outset that there are doubts in his mind. Also, it seems clearly indicated that, had they hired that "other fellow," all doubts would have dissolved.

Let's delve a bit further into our hypothetical situation. In hiring the man they were not completely sold on, two members of management effected a savings in salary-plus fringe benefits —of, say, twenty-five dollars a week. Now, twenty-five dollars is twenty-five dollars, and if you take enough such items and add them up, a rather impressive looking "savings" may result.

But did they really save this amount? In salary expense, yes; that's evident

Sometimes forgetting the budgeted salary, and paying an extra twenty dollars a week to get the right man, is the best way to save money

and tangible. But what would have been the difference in operating costs between the installation set up by this new fellow as opposed to the one that would have been set up by the man who wanted more money? Unfortunately, here is something we will never know.

Let's repeat again the words of the personnel director. ". . . this lad will probably work out." But what does "working out" consist of? Millions of people, in every walk of life, work out—but some work out better than others. Where technical knowledge is involved it is often impossible to measure the degree of working out in terms of dollars and cents. There are so many hidden factors, so many hundreds of ways for an expert—an alert, idea-minded supervisor—to save money for his company. There are so many different ways in the fields of punched cards, automation, office management, etc., of skinning the cat. In each way there is a cost factor involved.

Let us assume further that our new tabulating supervisor, recently hired, does, according to the hopes and predictions of management, actually work out. This could mean only that he has sufficient knowledge and experience to set up an installation which does not fall flat on its face. In other words, the billing, accounts receivable, and whatever other applications are involved, are processed on a daily basis to management's general satisfaction.

Well, some may argue, what more can we expect?

Training costs can be high

There is one way to get an effective answer to this question. We can call in a systems consultant. This man, or organization, will come into the tabulating department, sit down with the new supervisor, observe the processing in operation, and review in detail the existing set-up. At this point, assuming that the consultant is competent, he will be able to evaluate the system in terms of efficiency and cost. He will be able to suggest changes and improvements. He will be able to cut down the expense of operating the department, and possibly produce better service and more useful reports.

Bear in mind, however, that such a review would normally not be made until say, at least six months after the operating start of the installation, or approximately ten months after the hiring date of the new supervisor. Think of all the money that has gone into the installation prior to this point. Tabulate the costs involved in the training and orientation of the supervisor in order to equip him to relate his technical knowledge to the problems of the business. Consider the costs of setting up the procedures, drawing up and ordering forms, training people to operate the machines, familiarizing them with the new processing routines, etc., etc., ad infinitum.

Again we pose the question: did management actually save twenty dollars a week in hiring this man? Possibly it did. The answer would depend primarily on a completely unknown factor: the comparative potential of the fish that got away—the man the company neglected to hire because he was too expensive.

At this point let's make another assumption. Let's assume that the too-expensive man was everything management judged him to be at the interview. He was progressive, quick-

Measure each candidate in terms of what he can do for the job, instead of merely looking for the one who happens to fit the job description

thinking, idea-minded and active in the field. He kept up with the latest literature on machine accounting and automation; he attended lectures and seminars; he was aggressively determined to evaluate constantly his own installation with an eye to continual improvement and revision. In other words, this fellow was much more "on the ball" than the man who actually got the job because he was willing to accept twenty dollars less.

All right, let's review briefly the potential involved. How might aggressive idea-searching as opposed to mediocre think - only - when - you-must philosophy have saved money for this company? Well, in countless ways. Tabulating machines operate in their different functions and cycles in accordance with the arrangement of plugwires set up in their control panels. Control panels range in cost from about fifty to one hundred dollars apiece. An alert supervisor will figure a way to make the same control panel serve for two, three or four different runs. To accomplish this requires considerable thought, a high degree of concentration. It would be much easier to use a single control panel for each job.

Let's take a random guess and say that our mediocre supervisor used thirty panels in place of the twenty-four that would have been used by the more alert "fish that got away." This would represent an additional cost of about four hundred dollars—or sixteen months at twenty-five dollars per month. Moreover, this is a cost that even a systems review might not ordinarily highlight, since the expense of consultants going into such refined detail would in all probability be prohibitive.

There are hundreds of other ways for the technician to save money for his employer. The combining of processing steps, operating short cuts, the elimination of duplication, the use of training aids and gimmicks, properly written procedure manuals, proper forms design, etc. In the field of automation, for example, such savings could be multiplied many times. A *low cost* computer costs at least forty dollars per hour in rental expense. The benefits of efficient programming (the setting up of job instructions in the machine) where machine cycles can be eliminated or cut down, resulting in faster processing, could be translated into many dollars' worth of machine time saved.

Our example of the mediocre tabulating supervisor was selected merely as a handy reference. The same illustration could apply to the fields of office supervision, credit management, personnel management and a dozen other areas. There are tricks to every trade. To a greater or lesser degree any expert can be legitimately regarded as a technician.

Take, for example, the office management field. The office manager is concerned with work flow in the office. Needless steps, both mental and physical, should be eliminated wherever possible. Ample work space must be provided for each operation, yet, equally important, space must not be wasted. Operational flow charts are helpful in planning an office, and aids of this type should be familiar to the individual who is responsible for the layout. Factors such as noise, proper communication, color arrangements with regard to eye ease and fatigue reduction, work processing devices and aids, supervisory vantage point, desk arrangement, machine arrangement, personal belongings, rest rooms, etc., all must be scientifically considered in setting up and operating an efficient office.

Technical skill and knowledge play a part in virtually every supervisory job. Countless money-saving ideas are available to the supervisor with an alert and open mind, and a desire to advance his own knowledge along with the well-being of his company. That's why, in considering salary costs of supervision the savings potential from an operating viewpoint should be a primary factor in arriving at a wage level decision.

Quality is the best economy

A good supervisor may operate an office or department with twelve people, as opposed to sixteen required by the lazy or mediocre supervisor. The training of subordinates is vitally important to the operating cost of an installation. Is the supervisor in question a patient, systematic and intelligent teacher? (This is an important requirement whether it is part of his job to run classes or not.) Is he equipped to communicate his ideas to his staff?

A department is no better than the systems planning that goes into it. Once a procedure is inaugurated and tried it must not be forgotten. Systems auditing and appraisal is a field in itself. Usually this is done in accordance with the discretion and judgment of the supervisor, unless a separate systems department has been set up in the organization. Even where there is a systems department in operation, super-

(*To page* 68)

Data processor, IDP system announced

A MACHINE constructed to be used with tabulating equipment and systems, and computers, which supposedly cuts tabulating card files by 50 per cent and increases productivity by 100 per cent was demonstrated recently by Taller & Cooper, Inc., Brooklyn, N. Y., a division of American Electronics, Inc., Los Angeles, at the 1958 Annual Office Machinery and Equipment Exposition, held at Chicago's Hotel.

Named the Taller & Cooper Data Processor, the machine accepts fixed data from tabulating or edge-punched cards and variable data through its simplified keyboard. Two data inputs are automatically combined and punched out on tape. The tape output can be fed directly to a computer, or to a tape-to-card converter for use in tabulating machines and systems.

The device's range of applications includes inventory and stock control, payroll, and billing operations, banking and brokerage operations, accounting and production control. The data processor output is compatible with any computer or tabulating system and can be used in punched cards and punched tape, magnetic tape, drum and core systems. Lowering the operating cost of automatic business machine systems and computers by reducing paperwork and files, and by speeding flow of information, the data processor also makes tabulating systems available for direct application to more management problems.

Because it is composed of two separate units, an input console and a tape punch, which may be located at points distant from one another, the machine is suitable for handling reports from one or more remote reporting sources, carried by wire to a central data processing tape punch unit, with a switching arrangement to permit periodic or continuous reporting from various locations. A typical application of this feature is in reporting production data from distant and scattered sections of an industrial plant.

Basic characteristics of the Taller & Cooper Data Processor, according to the company, include elimination of handwritten reports; elimination of keypunch and verification operations; operation by untrained personnel; immediate and continual data reporting; accuracy and tight control over data processing; improved scheduling of tabulating equipment and computers; opening of new areas of data gathering, including research and development, product testing, product engineering, market research and sales management; and simplification of file maintenance by use of master reference cards.

Communications network installed

The inauguration of a 12,000-mile, high-speed private wire communications system to speed the flow of messages between its network of plants and offices was recently held by the Crown Cork and Seal Co., Inc., Philadelphia, at its Delaware Valley Headquarters.

John F. Connelly, chairman of the board and president of the company, started the network operation by activating the first automatically transmitted message relative to production capacities on Crown's Spra-Tainer aerosol cans to 18 plants and offices in 14 cities.

Commenting on the new system, which links Philadelphia (the company's main control center) with Cincinnati, Atlanta, Orlando, Florida, Leeds, Alabama, New Orleans, Dallas, Detroit, Chicago, St. Louis, Baltimore, New York, Brooklyn, and Milwaukee, Connelly reported that "this system will provide improved customer service through immediate transmission of orders from sales offices to plants, closer inventory and production control as well as simplified administrative and accounting functions."

The system is composed of six-way circuits to outlying areas, and four local circuits for distribution of traffic in the Philadelphia district. Messages at each station are made in the form of perforated tape by typing them on a typewriter-like keyboard. The taped message is automatically transmitted and simultaneously received at the switching center in Philadelphia, ready to be sent to its destination.

Thousands of messages will run between points in the system each month, enabling officials of Crown to receive frequent reports from their plants and offices, and to coordinate the activities of their wide-spread organization with efficiency.

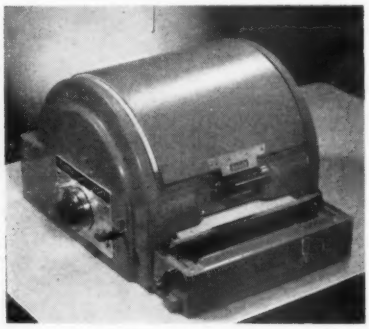
Crown Cork's new private wire network links control center with 13 outlets

▲ Microfilm flow camera
The "Documat F16" 16mm. microfilm camera has a reduction ratio of 16 to 1 and produces images of suitable quality for continuous enlargement. The camera also features a device for returning the original documents to the operator at table-top height in their original order. It is priced at $1295. *Documat Inc., 385 Concord Ave., Belmont, Mass.* **(A-1)**

New for the office

▼ Insulated file
A new one-hour "Class D" insulated safe record file has been added to the firm's fire resistive line of safes. It is listed by Underwriters' Laboratories to withstand 1700 degrees F. for one hour without damage to paper contents. The 3-drawer model shown is counter-height. *Herring, Hall, Marvin Safe Co., 1550 Grand Blvd., Hamilton, Ohio.* **(A-2)**

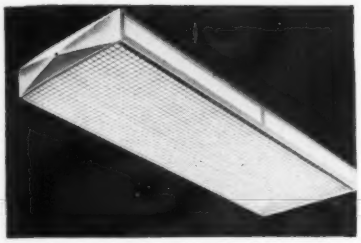
▼ Office copier
The Verifax Bantam Copier is the first Verifax copier to feature a curved glass platen. Base dimensions of the machine are 13¼ x 17⅞ in.; weight is 14 lbs. It accepts original material up to 8½ x 11 in., and is priced at $99.50. *Eastman Kodak Co., Rochester 4, N. Y.* **(A-3)**



▼ Wardrobe-storage cabinets
A line of combination wardrobe-storage cabinets produced by Penco Metal Products is designed for small offices, shops, stores and other uses, providing room for both office supplies and hat and coat storage, as well as for janitor's supplies. Four models are available. *Penco Metal Products Div., Alan Wood and Steel Co., 200 Brower Ave., Oaks, Pa.* **(A-4)**

▲ Photocopy machine table
This table for photocopy machines has a utility drawer and shelved storage cabinet for activator bottles and other supplies including legal matrix. It also features a "Nevamar" top which is stain-resistant and has double heavy duty squared-tubular metal legs and furniture steel trim. The table measures 30 in. wide x 18 in. deep x 29½ in. high, and is priced at $33.95. *Marnay Sales & Manufacturing Co., 1270 Broadway, New York.* **(A-5)**

▼ Address units
A new unit for addressing is perforated to separate into 4 address slips for use in "Master Addressers." Typing and guide lines are printed on the face of each unit, and a coated hecto carbon is incorporated in the collated set. The units are packaged in sets of 125. *Master Addresser Co., 6500 West Lake St., Minneapolis, Minn.* **(A-6)**

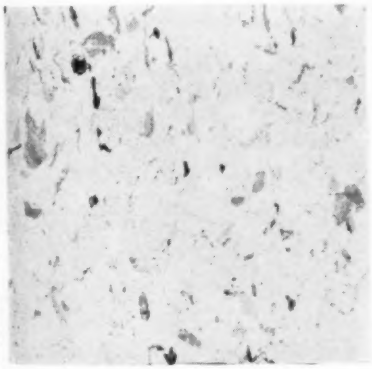


▲ Lighting fixture

To the Gibson Ortho line of lighting fixtures the "Ortho 66" has been added, featuring straightline design and plastic egg-crate louver, plus the "Uni-Race," a patented Gibson wire channel, which houses branch circuit wires for additional units, if desired. *Gibson Manufacturing Co., Atlanta, Ga.* **(B-1)**

▼ Tile line

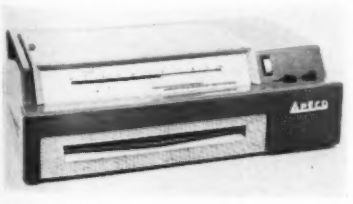
The "Imperial" series in Excelon Tiles is available in 8 patterns of grey, white



with black accents, green, tan, taupe, beige, cedar, and black with white highlights, and has a texture-chip design which is suitable for commercial-institutional areas. It resists greases, alkalis and dilute acids and is of a vinyl-asbestos composition. The tile is ⅛-in. thick and fire-retardant, available in 9- x 9-in size. *Armstrong Cork Co., Lancaster, Pa.* **(B-2)**

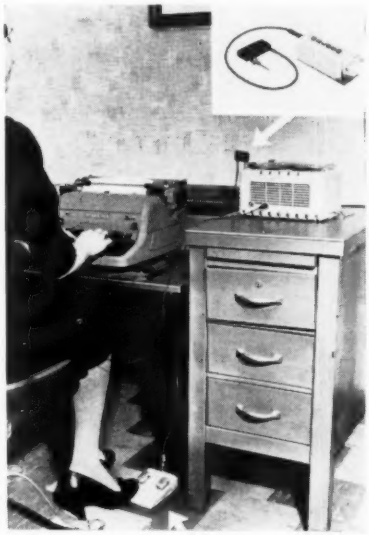
▼ Photocopy machine

The Apeco Uni-Matic "Auto-Stat" photocopy machine is a high-speed, desk-top, electric photocopier which makes copies of printed, typed, written, photographed or drawn originals. It is priced at $423.50. *American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago.* **(B-3)**



▼ Recording-dictating machine

This new 7½-pound dual-purpose recording and dictating machine is Italian-made and portable. It has a built-in speaker and comes with crystal microphone, carrying case, reel of tape



and take-up reel, and is priced at $179.95. Accessories for remote control operation are available. *American Geloso Electronics Inc., 312 Seventh Ave., New York.* **(B-4)**

▼ Microfilm duplicator

The "Uniprinter" is a new printer designed to process direct, dry contact

copies of card-mounted microfilm frames from 35 mm Filmsort Duplicards containing either unexposed Kalfax or diazo film. Unit weighs 19 lbs., and measures 9 x 14 x 12 in. *The Filmsort Co., Pearl River, N. Y. Division of Miehle-Goss-Dexter, Inc.* **(B-5)**

▼ Holding devices

Xerography holding devices, for a variety of xerography plate sizes, are de-

signed to fit on the various camera models in every size—vertical, low bed and overhead. Thus, the company reports, an office using both xerography and film reproduction, or one using several cameras of different sizes, can interchange the holders between cameras. *Robertson Photo-mechanix, Inc., 7440 W. Lawrence Ave., Chicago 31.* **(B-6)**

▼ Posture chair

Named "Ensemble," the group of office chairs has Ortho-Tilt back and a choice of 3 different arm rests, avail-

able in 100 color and fabric combinations. Shown is the "Supervisor" executive chair, Model A-474-DO, upholstered in heavy waffle weave Trilock and Naugahyde, with cast aluminum base. *Cramer Posture Chair Co., 625 Adams St., Kansas City, Kansas.* **(B-7)**

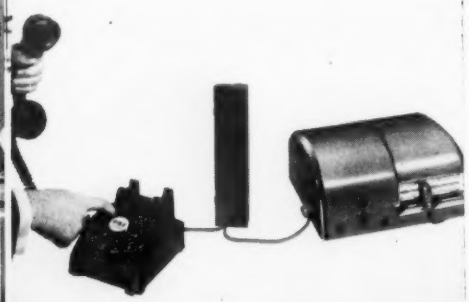
For further information, use Readers' Inquiry Coupon on page 80.

▲ Check personalizer

The Vari-Typer Check Personalizer personalizes bank checks with names, addresses, account and transit numbers; it features changeable type and spacing, centering scale and uniform impression in typing directly to paper masters for offset reproduction. *The Vari-Typer Corp., 720 Frelinghuysen Ave., Newark 12, N. J.* **(C-1)**

▼ Dictation machine

The "Tel-Vac" dial-controlled dictation machine is designed for use with PBX and PAX office dial telephone systems. Connections are made by the Telephone Company; one direct line from each dictation unit to a small telephone terminal box is required. As many lines as required may be installed. *Peirce Dictation System, 5900 Northwest Hghwy., Chicago 31.* **(C-2)**

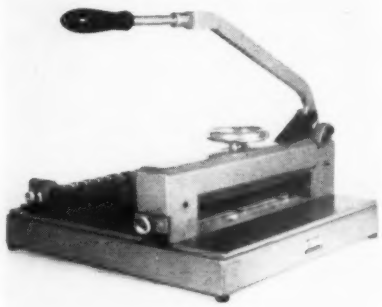


▼ Rubber type

Base Lock Interchangeable Rubber Type allows for alignment of various size characters, ranging from 1/16 in. to 1¼ in. Old English and outline styles of type characters are available. Prices for complete fonts of the alphabet and figures start at $1.85. *Force Western, Inc., 434 S. Wabash Ave., Chicago 5.* **(C-3)**

▼ Paper cutter

Designed for office and duplicating departments, the "Triumph" manual paper cutter is equipped with a permanent rule and finger-tip operation of the movable back gauge. The machine is available in 2 sizes—the basic 14-in. and 18-in. models. *Michael Lith Sales Corp., 143 W. 45th St., New York 36.* **(C-4)**



▼ Automatic-feed perforator

The "Cansamatic" is capable of canceling punched card and magnetically-coded checks. Checks are stacked automatically in sequence, and the machine can handle up to 400 checks a minute. *Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40.* **(C-5)**

▲ Calculating machine

The new Victor Special Automatic Printing Calculator is designed for users who do not require total transfer or automatic constant features. It divides, multiplies, adds and subtracts automatically through one control and 10 numeral keys, and is priced at $535. *Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18.* **(C-6)**

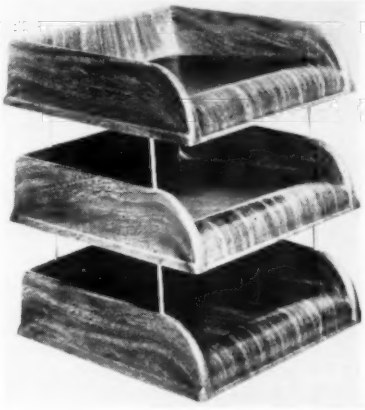
▼ Ball point pen

The new "Capri Mark III" ball point pen is guaranteed by the manufacturer to write on surfaces that formerly rejected ball pens, and features a special-formula ink with detergent action. "Piggy-Back" refills, providing extra points, are included, and pens are available in an assortment of colors. Priced at $2.49. *The Paper Mate Co., Inc., Subsidiary of The Gillette Co., 444 Merchandise Mart, Chicago 54.* **(C-7)**

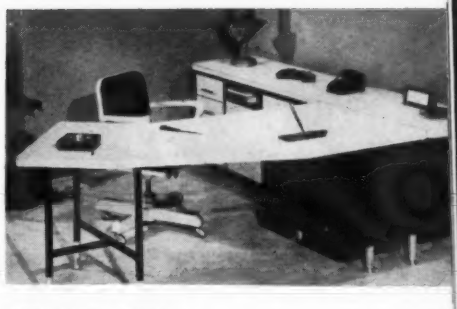
For further information, use Readers' Inquiry Coupon on page 80.

▲ Office chair
Chair (No. 1204U) is one in a new series of "Park Avenue" chairs recently introduced by the firm. Units in the series are based on the Danish modern school of design, and feature Plastelle baked enamel finishes on steel square tube construction. A wide range of decorator colors is available. *Royal Metal Mfg. Co., 1 Park Ave., New York.* **(D-1)**

▼ Plastic letter tray
Styled in walnut, mahogany, grey driftwood and blonde mahogany, plastic letter trays measure 11½ in. wide by

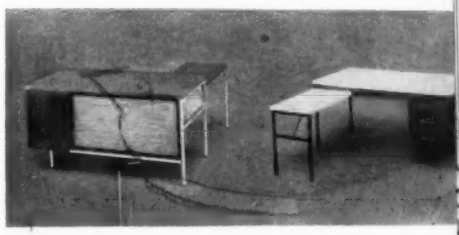


12½ in. in length. "Non-skid" rubber feet are a feature. *Capitol Metal Products Co., 577 University Ave., St. Paul, Minn.* **(D-3)**



▲ All-metal desk
The Model VII all-metal desk features a 7-sided work area and 4 drawers. Maximum dimensions are approximately 82 x 36 in. Matching credenzas may be added to the unit to augment its storage and working space. *Standard Pressed Steel Co., Jenkintown, Pa.* **(D-5)**

▼ Modular furniture unit
The 4 basic pedestals of this desk are built on a free-standing steel frame, and exterior panels and drawer fronts

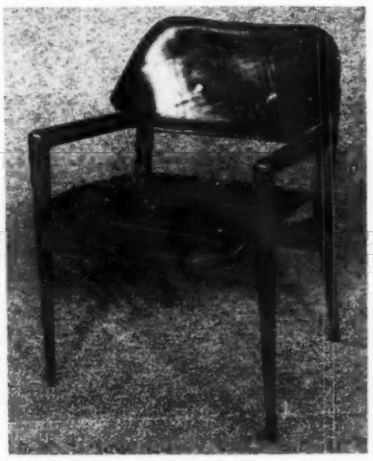


are in hand-rubbed walnut. Drawer interiors are of hardwood. *Office Furniture Div., Eisen Brothers, Inc., 175 Main St., Lodi, N. J.* **(D-6)**

▼ Legal-size pedestal
Three new legal-size drawer pedestals, designed to meet a wide range of filing and storage needs, are being offered

by the company. Pedestals measure 24 in. (shown here), or 18 and 30 in., and are available with 2 file drawers, one file drawer and 2 box drawers, or with 4 box drawers. *Aetna Steel Products Corp., Arnot-Jamestown Div., 730 Fifth Ave., New York 19.* **(D-2)**

▼ Office chair
Designed by Irving Sharrow, this molded leather and walnut chair recently won a $1000 first prize award



in The Upholstery Leather Group's Design Competition. According to the manufacturer, it is the first molded leather chair to be produced by a manufacturer in America. *The Taylor Chair Co., Bedford, Ohio.* **(D-4)**

▼ Machine stand
The Hercules machine stand is specially-designed to blend with the modern, functional lines of Olivetti accounting

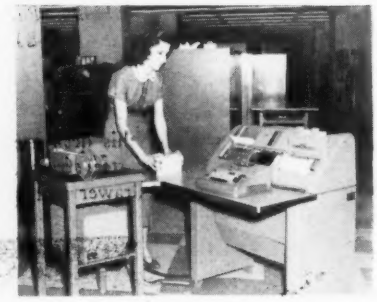
machines. Features include steel tubing with electric arc-welded construction, white laminated plastic tops and 4 adjustable rubber-covered glides. *Meilink Steel Safe Co., 1672 Oakwood, Toledo 6, Ohio.* **(D-7)**

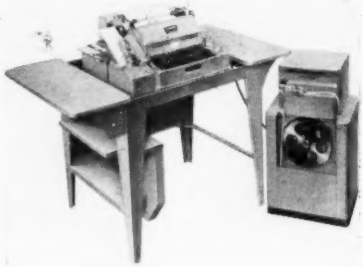
A Monthly Feature

Tools of the Office

Equipment for "Automation in the Office"

By Frederick Vogel





Integrated data processing equipment is as varied—both in size and price—as are the many applications for which it is used. Units shown, from top to bottom, are a Systematics punched card intercoupler installation; Friden Selectadata (right) coupled to Programatic Flexowriter; IBM Cardatype, and the Burroughs 220 System.

IN the little more than four years that automation has enjoyed its most significant, if not spectacular, place in management thinking, office procedures, and the means by which they are verified and controlled, have been in a constant state of examination and re-examination by systems and procedures experts. Accordingly, recent technological developments have enlarged the capacities and areas of application for the equipment used in office automation.

Automation in the factory, of course, is almost as old as the Industrial Revolution itself. But automation in the office is very new; and it promises to become even more highly-developed (and, possibly, more complex) in the future. New studies on office automation appear practically on a weekly basis, and a large vocabulary has evolved to explain its workings.

Essentially, the concept of automation is simple. The means of carrying out this concept, however, can be extremely involved, and the ramifications in automating a single procedure may very well overwhelm the company that has not properly planned every phase of its application.

Automation, broken down to its simplest terms, implies "automatic control." This phrase usually means the automatic operation of a machine by some external mechanical or electrical agency, without direct human intervention. Thus, new office work techniques, whether or not automated in any strict mechanical sense, usually stress "integration" of one phase of work with another to eliminate wastes of time, motion and material. And one of the most important words to emerge from the automation concept is this very word—integrated. Integrated data processing, for example, is among the most familiar of all terms connected with an office's automation program.

Add to integrated data processing, such advances as newer and larger computers, "common language," magnetic tape, and constantly-changing equipment being released by manufacturers, and one receives the impression that automation, rich as its heritage is, may reasonably expect an even brighter future.

Integration, naturally, should imply wholeness. It means that the parts of a system should be united into a complete whole. When applied to data processing, the term means that the various parts of a system are designed so that each fits neatly into an overall pattern. The word is roughly equivalent to "coordinated," and as such suggests that the different elements do not work at cross purposes, that there is no unnecessary duplication of work.

The final result of an IDP system is generally obtained by arranging for the automatic perpetuation of repetitive data so that information entered into the system remains in it, in usable form, and does not need to be re-entered, and that it does not emerge from the system except in its completed,

processed form. There are many ways of achieving this goal. Indeed, the fact that the word is relative in its actual use becomes apparent as soon as one attempts to define the limits of a system which is to be integrated.

One vital question is, simply, how large should a system be? Let us consider the handling of charge sales in a department store as an example. The sales clerk is instructed in how to obtain necessary information for the charge—description and price of the item, customer identification and credit rating, and other pertinent data—and in how to record it. She has a means of following through from merchandise tag and customer credit card to sales slip. In other words, she works with a proved system of operation.

Let us now follow the sales slip to its destination. In the first place, the slip is usually prepared in several parts, with the help of carbon paper. Each of these parts has a termination point, and at each terminal it finds itself entered into another system—such as a system for recording accounts receivable, for preparing customer statements, for analyzing sales, or for determining inventory requirements. Or the information carried in the sales slip may be copied into some other form (entered in a ledger, punched into a card, et al), and in its new form it is similarly entered in some system.

Thus, it is rather apparent that the operations of a business are broken down into a series of systems. This in itself implies a coordination of the routines of one or more departments involved in processing a single related item. Thus, the word *system* itself implies a collective, coordinated set of activities or, in other words, integration.

Let us say, a company requires two separate systems to process an order-taking function and a shipping function. If the two systems work together in coordination as part of an overall scheme, with neither operating in a way to duplicate needlessly the work of the other, or in a way to waste the time, work or material of the other, or toward a purpose in unnecessary conflict with that of the other, then the two systems have themselves been integrated. This process can be extended so that ultimately all of the localized systems in a company can be integrated with each other. When this occurs, we may say that the limits of the system are the limits of the company itself and of its operations. Integration, of course, may exist on either a small or large scale. But to say that a company has an "integrated data processing system" is meaningless until the scope of the system, or of the integration, has been precisely defined.

The true concept of IDP becomes clear: It means nothing more or less than the systematization, within the limits imposed by the needs and capacities of a company, of the flow and manipulation of the data essential to the conduct of the business.

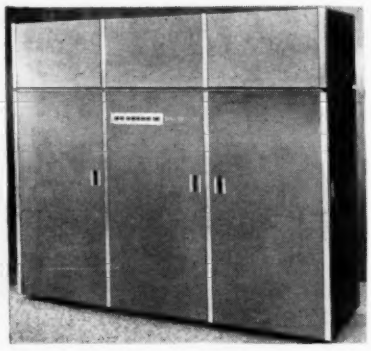
But, let us return to our original term—automation. The term became a familiar word in factories to describe the automatic movement of work in process from one machine to another. For the office, it is usually considered to mean automatic control—that is, the automatic operation of a machine by some external mechanical or electrical agency, and without any direct human intervention.

Punched paper tape is one such agency to control the operations of many kinds of machines, including typewriters, computing equipment, graphotypes, card punches, and so on. Equipment so controlled is said to be automated.

The agencies used for purposes of automatic control of office machinery are numerous. Generally, they are called common languages, and among these may be included punched cards, magnetic tape and magnetized codes on paper. The fact that this control at times is internalized within certain machines—that is, various units have properties within themselves to incorporate a number of functions which otherwise would be performed by other separate machines—does not alter the significance of what the equipment handles.

If a tape-punching typewriter is used to prepare a sales order, for example, and if the resulting tape is then used to operate an accounting machine which prepares the bill, this billing operation is said to be automated. It is possible, however, to obtain a single machine which performs the same functions. It is perhaps more correct to consider that equipment as automated which can be controlled automatically by some external non-human agent, or if it is sufficiently complex that performance of one operation can be used automatically to control the performance of

Efficient data handling, in this day of mounting paperwork, requires machines and systems capable of processing huge volumes of information automatically. The three systems pictured here are, top to bottom, the IBM 705 Electronic Data Processing System, combining calculating speed with vast electronic "memory"; the Card-to-Magnetic-Tape Converter of the Remington Rand Univac system, and the Underwood Electronic Business Computer, a digital computer featuring magnetic memory disc of 100 registers of 10 digits each.



Integration of office procedures does not necessarily require machinery, but large installations can be of great value to offices which process vast amounts of data. Photos at left show Royal McBee's LGP-30; Stromberg-Carlson's S-C 5000 High Speed Electronic Printer, the Bendix G-15 General Purpose Digital Computer, and Underwood's Data-Flo system.

a different, not accessory, operation.

The automatic printing of credit balances in red on an adding machine is not a form of automation, since this falls into the category of an accessory function or a refinement. But the automatic computation of price extensions and totals on a machine used to type a sales order would be an instance of an automated operation.

Since a system may include some equipment which is automated, as well as some which is not, a data processing system may be integrated without being automated to any degree. On the other hand, all of the equipment used in it may be controllable by automatic external means. Usually, some degree of automation is present in an integrated data processing system.

But, it must be remembered, IDP does not, by definition, require complex equipment at all, although high-powered equipment may, and often is, used in such system. This is true because the means of preserving data in a form for automatic repetition can be fairly simple. Carbon paper and duplicating masters can be used for this purpose in appropriate situations. Such data, however, can be preserved by entering it into a form which can be read by a machine. The most familiar example in discussions of IDP is punched paper tape. Uses of this medium are legion:

It may be fed into a tape-to card converter, so that information in it can be entered into punched card form for use in punched card accounting. Or it may be converted into one or another of the other common languages described below.

It may be used entirely within one office, or, through use of wire or radio, may be transmitted to other offices at great distances from the original source.

It may be used simply to distribute information, or it can serve as input to calculating equipment, including large electronic computers. In some cases, it is first necessary to convert it into another form, but this can be done automatically, too.

The agent for integration—and in this case for automation also—is the punched tape which controls the various machines in the system automatically. Such a system need not be complicated or elaborate, as many recent articles in this magazine have pointed out. Definitely, an IDP system is not only for the large office alone.

The advantages of using a common language are three-fold:

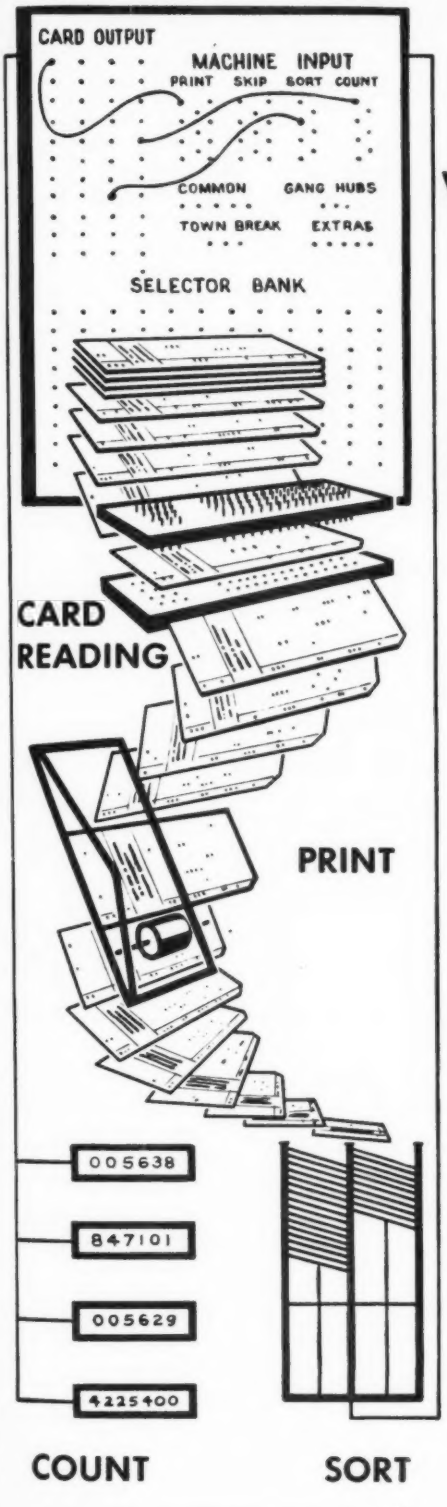
First, since it can be used to give automatic control, certain types of systems can produce more work than previously. This, however, does not necessarily imply a reduction in the cost of operations, for the skilled labor required is usually more highly paid and the equipment is often expensive. On the other hand, some installations can bring real savings in clerical costs, and others make possible the performance of work which could not be handled efficiently without considerably enlarging the payroll of the company.

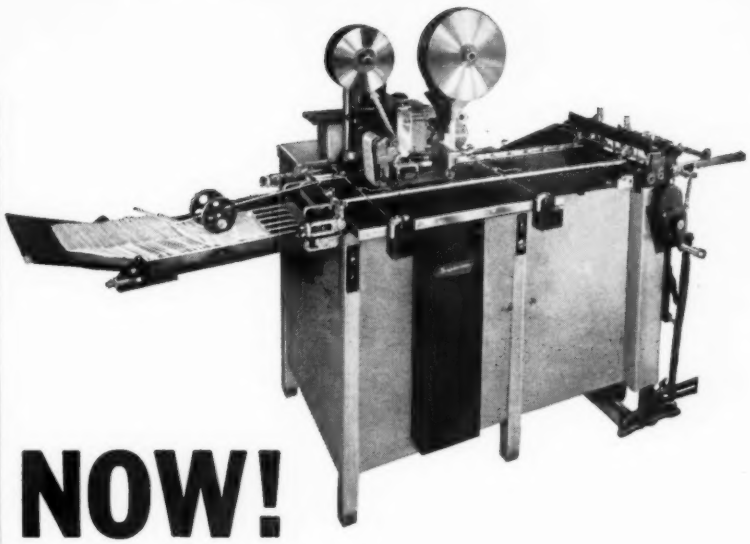
Secondly, machine accuracy is very high. Consequently, if information entered into an IDP system is accurate in the first place, the possibilities of errors made in transmission, posting or figuring are reduced to a large degree. Increases in accuracy not only reduce losses due to errors, but also eliminate a great many of the steps otherwise required to verify the accuracy of the information.

Lastly, a characteristic of many integrated systems allows instructions to a machine to be determined in advance of the receipt of data. The machine, therefore, can be programmed, so that when data are received it can perform the necessary operations without additional instruction. Electronic computers, in particular, may be programmed to handle complex sequences of operations, and provisions can be made for handling exceptions to routine that otherwise require treatment on an individual basis. This handling of exceptions is the costly part of many bulk operations, since isolating and handling exceptions disrupts high-speed routines and usually requires the exercise of human study and judgment. Many exceptions, however, can either be handled directly by a computer, or at least automatically pulled from the data flow so that human aid may be called upon.

Installations which use a computer reveal the extraordinary calculating

PROGRAM PANEL





NOW!

SELECTIVE ADDRESSING FROM PUNCHED CARDS IN ONE MACHINE PASS

Electronic "reading" of coded information on IBM, Remington Rand or other punch-card systems permits the Model 101-S Scriptomatic Addressing Machine to print, skip, sort and count *without* disturbing the file sequence.

Many publishers have adopted the Scriptomatic system to their fulfillment operations. Mail order companies and large direct mail advertisers use Scriptomatic for selective punch card control and addressing. Flexible list handling and the great economy of punch card masters over other methods are the two principal reasons for the swing to Scriptomatic.

Here's How SCRIPTOMATIC SELECTIVE ADDRESSING Can Work For You

PROGRAM PANEL can be set up, for example, *to print* all cards in a given category; and at the same time counting all categories for statistical audit.

CARD READING: IBM, Remington Rand or other punch cards are "pin-read", the pulse picked up from the card actuates the printing roller and counters. Reading pins go through the holes to complete selective circuits *you* programmed.

PRINTING is done *only* when called for. No blank envelopes are fed without being printed.

COUNT is picked up on any machine function programmed. Statistical survey can be made as by-product of your addressing run.

SORT in either of two pockets can be based on customer activity you program. Inactives may be pulled while addressing is carried on, for example.

Mailing material of almost any type or size can be addressed by the Scriptomatic Model 101-S. A complete line of attachments is available to tailor Scriptomatic to your particular data writing needs. Discover how you can print from economical card masters . . . with *double* the flexibility . . . at *half* the cost . . . with the new Scriptomatic Model 101-S.

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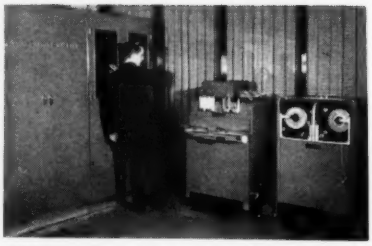


Above: Tape-to-Card Converter and, right, Dataplotter are other units in use to speed and simplify the flow of office data. ***(Pictures by courtesy of Remington Rand and Electronic Associates, respectively.)***

speeds of the machines that allow them to process a tremendous volume of data. Indeed, speeds of certain units are far greater than that of any machine used to merely supply the data. To use a computer efficiently for large-scale data processing, therefore, it is necessary to use some method for accumulating large volumes of data for consumption by the computer.

This can be achieved by accumulating data while the computer is not in use—a method which is not economically very sound for a company which cannot use its computer in the meantime for other applications. It is suitable, however, for companies not owning a computer, since data can be processed by a computer at a service center outside of the company. One example of this is a new electronic processing center, a "computer cooperative," set up recently in Hartford, Conn. Four insurance companies share both capital investment and operating costs of a computer and auxiliary equipment, and each also shares in use of the equipment.

How best to supply data sufficient to warrant keeping a computer on the premises? The usual method is to use a battery of inputs, by which data can be recorded at many different points in the system. If the company happens to be a large one, with a great deal of paperwork, a sufficient volume of work is already being done to keep a large computer in operation.

One of the problems in developing IDP systems, then, is in obtaining source data. Ideally, information should be put into machine-sensible form as soon as it develops; for example, sales data should be recorded in a common language at the time and place of sale. For this reason, cash registers have been fitted with tape punching accessories, and merchandise has been tagged with pre-punched tags carrying information about the merchandise in coded form.

Variety of units available

Since, as the sources of data become more and more removed from the data processing facilities, the greater will be the number of data recording units required, and the more extensive the communication network. Many different types of machines are now available with facilities for punching tapes or cards. Among these are adding and calculating machines, bookkeeping and accounting machines, and other equipment which can produce, as a by-product of some necessary operation, a common language entry. Thus, a typewriter, teletypewriter, and the like, may be used in preparing a sales order which is used and filed in the normal manner, punching simultaneously a by-product tape, used to transmit the same information to other parts of the processing system in use.

This recording, ideally, should occur as part of an operation that is necessary in any case, such as typing a sales order. Often, it may be necessary to use a keyboard of some kind to enter data into the system directly, since at times this is the only method available. Numerous types of equipment are available for the purpose, including adding machines and typewriters.

Still another "link" is sometimes necessary—equipment to convert one common language into another. Again, a number of different kinds of equipment are available to make exchanges of information among such diverse common language media as magnetic tape, punched cards, punched tape, magnetic codes on paper documents, and printed characters designed to be read by character recognition devices.

Another form, introduced of recent date, for reducing costs of data origination is the method for printing a special four-channel numerical code mechanically from standard adding, calculating, bookkeeping, accounting and other office machines. This system operates by a method of purely mechanical linkage with the working parts of these machines. The code is printed on a narrow paper tape, and it can be converted to standard punched tape or punched cards through a process of photoelectric scanning in which the punch responds to the tape's light and dark areas. This printed tape thus becomes another in the list of common languages. It is more compact than standard punched tape since, not being perforated, it requires less paper strength.

Standard punched paper tape may be used in systems employing codes up to eight channels. It is now conventional common language for much IDP equipment. Modified, the codes may be punched along the edge of a card, allowing differences in handling. Each of these forms of tape has the advantage of compactness and ease of cutting and splicing. Relatively inexpensive as common language media go, they are generally convenient to handle, but are not as flexible for uses that require sorting of individual records as are punched cards. When necessary, they can be converted to punched cards, however.

Like paper tapes, punched cards are relatively inexpensive. They are bulkier than the tapes, but permit greater facility in sorting and unitized handling. Magnetic tape, naturally, is used largely within electronic computer systems, where it is used as the common language medium between components of the system. It permits input and output of data at enormous speeds; together with its great compactness, its advantages are thusly two-fold. It is more expensive than other media to handle, but coded information can be erased and replaced with new data practically without limit. Thus far, it has not been considered feasible for use in recording source data at points remote from the computer. Magnetic coding on paper documents has been developed to a considerable degree within recent years. The recording of codes on the face of a check, for example, or use of equipment using documents carrying magnetic stripes on the reverse (in which coded information

can be recorded) are some of the new developments. Since the codes are supplementary to printed data, they may be used with regular documents.

Thus, magnetic codes may be developed in several forms. Codes equivalent to those used on magnetic tapes may be printed directly on business forms. They can be printed invisibly, for the use of machines only, or with magnetic ink, for visual inspection when required, as well as for machine handling. In other cases, magnetic principles may be used in combination with the principle of photoelectric scanning of printed characters. This last feature makes it possible for machines to read printed material, by means of a method termed character recognition. It is strictly visual and may be used in special cases when the printed symbols are standardized as to type and registration, in order that they can be compared with symbols stored in the reading machine. Printed characters are read by comparing them with the stored symbols, and such equipment may punch cards with information corresponding to that read.

New technological developments in office automation have also increased in the area of communications facilities. One major problem here has been that existing wire facilities were designed to handle five-channel codes. It has been determined, however, that codes with up to eight channels are more suitable for certain kinds of work, especially in making inputs to electronic computers. Recent developments in high-speed, tape-to-tape transmission for codes of up to eight channels have indicated that such may become popular in the not-too-distant future. Likewise, high-speed transmission of data directly between privately owned data processing units is on the upswing.

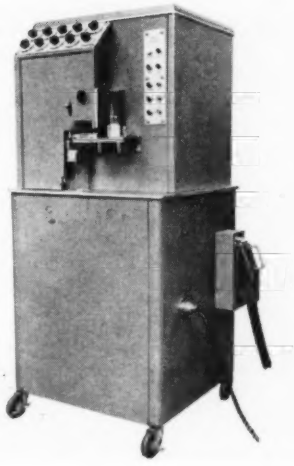
Meanwhile, other approaches to data transmission are being refined. For conventional wire services, for example, automatic switching service is available, so that messages containing a routing code may be directed automatically at relay stations into the proper channels for retransmission—and, upon request, even into specified receiving units. This latter development means that data can be sorted out automatically on arrival, as in the case of sales information, which may be recorded on one machine, and payroll information on another machine.

Still another technical advance has been development of improved methods of obtaining what is termed "random access" to data stored in a system. Almost without exception, data processing in large offices has required the accumulation of data of a given type and summarization of that information before applying it analytically. The total sales of a given product, for instance, during a specific period of time would be summarized and the total subtracted from inventory figures or added to sales figures in one of their various breakdowns, or otherwise applied to existing summary records. It had not been feasible to post each individual transaction to these summary records, because access to the records was burdensome and inefficient. Thus, similar items were usually batched.

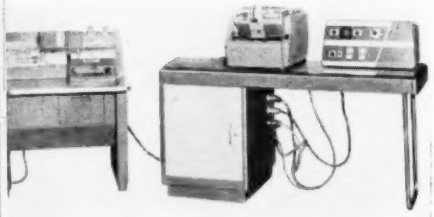
The batching process generally results in a time lag between a transaction and the evidence of its effect on the summary record, such as inventory. If inventory records can be kept current, it is possible to determine within a shorter period when the time has arrived to reorder. If the company can count on knowing immediately when stocks are low, it can rely on this information to avoid the need for maintaining larger inventory to cover possible errors in estimated sales.

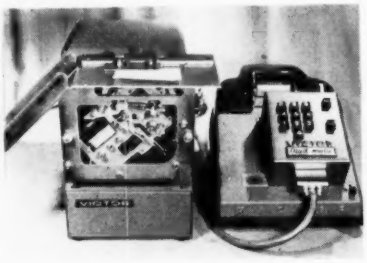
Hopes of being able to post each transaction as it occurs are moving toward reality. Recent developments have been made to facilitate such a process. New types of random access equipment permit the operator of an electronic system to enter the data from each transaction as it occurs into summary records. This is made possible by means of reaching, in rapid-fire order, the applicable portions of the records stored in the equipment. "In-line" processing, in which all records affected by a transaction are posted individually and at once, is becoming more and more feasible as new developments continue.

Certain random access equipment employs a series of short magnetic tapes, some employ storage on magnetic



An indication of the variety of automated equipment now on the market may be obtained from the illustrations on the right. Top to bottom, the high-speed printer, a component in the DATAmatic 1000 EDP system; the Kimball Tag Reader, an automatic sensing device; Clary Corp.'s Electronic Computing Machine, and the Burroughs 205 EDP system.





Units used to punch tape, to read and convert characters into machine language, and to list or list and perform arithmetical functions are increasing in importance in office automation. Shown on the left are, top to bottom, Monroe's Synchr-Monroe President, Cummins-Chicago's Perf-O-Reader (actuating 024 IBM Key Punch), and Victor's Digit-matic.

drums, and another employs a series of magnetic disks. It is no longer necessary to search the entire memory, since the search for data can at once be limited to that particular tape, portion of the drum, or the disk containing the data. This in-line processing is now available in many operations in which it was not feasible before, supplying management with valuable up-to-the-minute data on company operations.

To date, electronic data processing systems have indicated a greater value in producing on quick notice the reports managements require to oversee their companies than in simply reducing clerical expenses. This, of course, is their real importance; many, in the long run, will most likely effect cost reductions also. The control information received by management is also more complete and more accurate, and obtained in a faster time, than was ever possible before under manual methods.

One familiar—and true—concept today is that successful integrated data processing is not possible without an extensive systems study before installing the machinery. This need for systems work is widely recommended by those who have been closest to the subject. As a matter of fact, the emphasis placed on the systems approach is perhaps the most significant development of the times, since it is the efficiency of the office that matters, rather than the particular equipment obtained. This efficiency, of course, is reached through proper systematization of office work, whether it be achieved from use of manual methods, giant computers or various other mechanical devices. Indeed, it has often proved true that concerns which have made the necessary systems studies in preparation for data processing equipment have found therein the means of improving their operations, so much so that large installations of equipment were precluded—and still their operations became integrated.

Units aid systems development

Certainly, new equipment often will make possible the development of new systems, or, at any rate, make it possible for the smaller company to use systems that previously were disregarded because of the expenses involved. For this reason, many manufacturers have concentrated on medium- and small-size equipment designed particularly for the small organization. Likewise, technologists have begun to design component parts of less weight and bulk than had been produced earlier. (One obvious example of this is use of the transistor to replace the vacuum tube.) Thus, the equipment becomes more compact, requiring less space to accommodate it and less structural support for its lighter weight. Also, it uses less current, and as a result requires less air conditioning apparatus to control the heat it throws off.

A marked rise in interest in specialized, as opposed to general-purpose, equipment is also notable today. Typical of these are some of the electronic reservations systems used by airlines and railroads; electronic file equipment for recording inventory; and a battery of equipment to process the work loads of banking and financial institutions.

One of the most important developments in the office equipment industry during the past year, one manufacturer reports, has been the introduction of electronic devices which bring a high degree of automation to paperwork processing in the nation's banks. A constantly-increasing flood of checks reaching a rate of ten *billion* items each year, has posed problems in handling costs, storage space and manpower. Banks and the office equipment industry, therefore, are cooperating to extend development of automatic equipment to serve these needs, and to establish standards of size, shape and coding of such documents as checks and deposit slips. (How one manufacturer is attempting to solve banking problems is the subject of a full-length feature in the March, 1958 issue of *Office Management*.)

One expression now closely allied with integrated data processing is electronic data processing. The word electronic, of course, is used to describe equipment which depends on the use of vacuum tubes or transistors. It has been used at times to describe certain standard items of equipment that are not really electronic, in the true sense of the word. Electronics is a field in itself; consequently, a phase such as electronic data processing should not be applied to systems using standard *electrical* equipment only. Data processing is not electronic unless it involves vacuum tubes, transistors, and the like. Thus, electronic data processing almost automatically implies use of an electronic computer. But, as already mentioned, there are many instances of integrated data processing which do not require use of any electronic equipment whatever.

Included in the list that follows is a variety of equipment on the market. It will be noted that such equipment is extremely extensive and varied in application. Of course, the accompanying descriptions offered cannot begin to cover the technical details that distinguish one machine from another (or the possible combinations of equipment into office systems). Basically, the list is designed to act as a guide for those who wish to enter into further research on automated equipment and systems.

(*To page* 48)

H. J. Haughton, Vice President and Controller, Jones & Laughlin Steel Corp.

"Moore forms help us keep tab on costs"

AUTOMATED SYSTEM GIVES JONES & LAUGHLIN ACCURATE BUDGETING FOR RIGID COST CONTROL

A new costing system helps Jones & Laughlin Steel Corp. pinpoint costs with greater accuracy. This calls for fast action in collecting costs at their source. Punched cards record all elements of cost — yield, labor charges, maintenance and repairs, services, supplies, etc. An IBM 650 computes the actual cost of every product at each production stage.

This costing process is then repeated, but with budget data rather than actual. When both actual and budget costs are known, they are printed, together with the variances between the two, on a Commodity Cost Sheet, a Moore continuous form. This is J & L's control in print.

The mountains of production and cost data are handled at electronic speeds, giving all different levels of J & L's management timely and easily understood reports. Planning is speeded, with time for correction if needed. Big decisions tend to be more correct: little ones are routine. Valuable yardsticks measure results in all theaters of costs.

The Moore man helped with the scientific design of the procedures and forms used in the Automated Data Processing (ADP) system. For other examples of system improvement, write on your letterhead to the nearest Moore office.

MOORE BUSINESS FORMS, INC., Niagara Falls, N. Y.; Denton, Texas; Emeryville, Calif. *Over 300 offices and factories throughout U. S., Canada, Mexico, Caribbean, Central America.*

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Build control with

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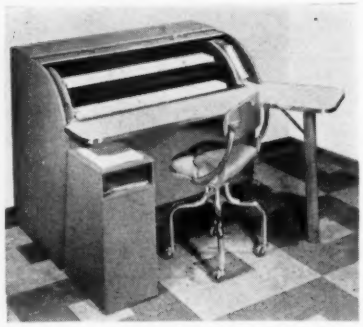


Equipment for the handling of cards or the bursting of cards and/or forms are two varieties of auxiliary units used in the automated office of today. *(Pictures by courtesy of Wheeldex-Simpla and Uarco, respectively.)*

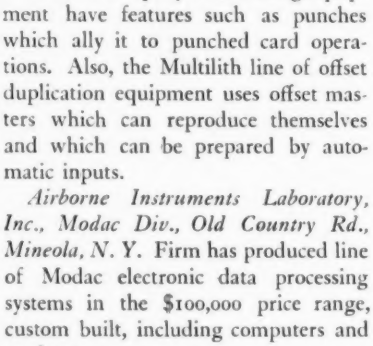
The Manufacturers

Addressograph - Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. Company has manufactured Graphotypes operated by punched paper tape. Certain of the company's addressing equipment have features such as punches which ally it to punched card operations. Also, the Multilith line of offset duplication equipment uses offset masters which can reproduce themselves and which can be prepared by automatic inputs.

Airborne Instruments Laboratory, Inc., Modac Div., Old Country Rd., Mineola, N. Y. Firm has produced line of Modac electronic data processing systems in the $100,000 price range, custom built, including computers and card-to-tape converters.

Alwac Corp., 13040 S. Cerise Ave., Hawthorne, Calif. Company was previously known as Logistics Research, Inc., and offers 2 general purpose digital electronic computers, the Alwac III E in $100,000 price range, and the Alwac 800, a large-scale system, with magnetic core storage and modular construction, using up to 50 magnetic drums through one buffer, with up to 10 buffers and up to 10 magnetic tape transports per buffer.

The increasing usefulness of automation has brought in its wake a vast amount of accessory equipment. Pictured here is the new IBM Tab Card File, developed recently by VISIrecord.



American Telephone & Telegraph Co., 32 Avenue of the Americas, New York. Company has made extensive line of communications facilities, based mainly on use of 5-channel punched tape, including Number 19 automatic sending and receiving typewriters; Number 14 transmitter distributors; Number 14 sending and receiving typing reperforators; as well as teletypewriters, and a line of switching systems and selector devices. The firm does research and development work on equipment for high-speed data transmission.

Ampex Corp., 934 Charter St., Redwood City, Calif. Company manufactures magnetic tape transport equipment, such as is being used for input and output in a number of electronic computers and specialized systems, including mail addressing systems, digital magnetic tape handlers, digital magnetic heads for "read" and "write," read-and-write amplifiers for putting digital signal data on the off tape, and specially-formulated magnetic tape. Equipment is rented or leased.

ANelex Corp., 150 Causeway St., Boston 14. Company has produced high-speed Synchroprinters for high-speed printing, with inputs from punched tape, punched cards, magnetic tape, or magnetic drums, also magnetic tape transport equipment, including Micro-Tape Steppers.

Bell Telephone Laboratories, 463 West St., New York 14. Research and development work for the Bell System. See listing under American Telephone & Telegraph Co.

Bendix Computer Div., Bendix Aviation Corp., 5630 Arbor Vitae St., Los Angeles 45. Firm manufactures G-15 general purpose digital computer in the $50,000 class, designed for engineering and scientific work; also has business applications using punched card and/or punched tape input. Special feature allows computation while input and/or output operations are in process. Alpha-numeric paper tape converter may be used for integration with systems using 5-, 6-, 7- and 8-level codes.

Burroughs Corp., 6071 2nd Ave., Detroit 32. Series F2000 computer for data processing features multiplier, multiplicand and product accumulator storage, designed for businesses, banks and governmental agencies. Up to 19 memory units may be used for data storage of varying factors or totals. All mathematical functions are performed automatically, and the machine has a full adding machine type keyboard which is used for the input of this computer. Punched Card Input Unit for the E101 desk-size electronic computer from the company's Electro Data Div. permits separate or intermixed data and instructions to be read into desk-size digital computer from information in punched cards. It is cable-connected to the E101 for hook-up and removal, and positioning an automatic-to-manual switch allows operator to choose whether data or instructions will be read directly from punched cards, or taken from keypunch's keyboard. Unit's speed is from 17 to 20 card columns per second, depending upon keypunch model used.

Datatron electronic computer accessories include Cardatron input-output system which permits use of several punched card units simultaneously, and Datafile electronic filing system.

The 220 is a general purpose electronic data processing system and has a digital system with full magnetic core memory. Basic arithmetic speeds are over 300,000 additions or subtractions, 30,000 multiplications and 15,000 divisions per minute. Up to 600 million characters of information can be filed electronically in the system. Its internal memory consists of up to 440,000 magnetic cores and is expandable from 2,000 to 10,000 computer words. Priced from $375,000 to $600,000. The company also produces the Class 9 electrically operated bookkeeping machines, Director "600" accounting machines, Sensimatic accounting machines, Sensimatic MA-

Sensimatic MC, Tape Perforator, Card Punch Control Unit, and Series M 200 Computing Billing Machines. Firm's new "Bank Automation Program" uses Electronic Bookkeeping Machine, Imprinter, Proof and Distribution Machine, Magnetic Sorter, Amount Printer and the 220.

Clary Corp., 408 Junipero, San Gabriel, Calif. New Electronic Computing Machine (ECM), completely transistorized unit built into standard office desk. Computations performed by electronic unit in drawer section of desk; results printed automatically on adding machine-type print unit mounted flush with desk top. ECM consists of 4 desk-mounted units connected by cable—key entry unit; electronic computation unit; programming unit; and printing unit. Operations performed by computation unit either under manual or program panel control. Present models provide for 30 program stops. Priced at $15,000 FOB, San Gabriel. Certain of company's standard adding machines and cash registers can be equipped to punch paper tape as a by-product of normal functioning. Clary also offers variety of machines designed to read codes for automatic input to electronic systems; also, data printers, printing timers, and electrical input keyboards.

Copy-Craft, Inc., 105 Chambers St., New York 7. The Ormig Selective Data Printer produces from a given master all information on that master, or selected data condensed on single item tickets. Machine advances automatically from line to line; job tickets, each of which describes a different operation and bears certain data common to the entire job, may be produced in tailor-made series.

Cummins-Chicago Corp., 4740 N. Ravenswood, Chicago 40. Cummins' Perf-O-Data equipment encodes documents by perforation; the Perf-O-Reader (character-scanning unit) scans the perforated characters by means of a photoelectric reading device. Other equipment includes an auxiliary keyboard which provides for manual entry of variable information or corrections. Price ranges: Perf-O-Data, $895, Perf-O-Reader, $9,950, both f.o.b. factory, plus Federal and local taxes.

Dage Television Div., Thompson Products, Inc., W. Tenth St., Michigan City, Ind. Firm has made line of closed circuit television equipment, which is used in some automatic systems to speed exchange of visual information, as in verifying signatures on documents. The equipment is used on 8,000 cycle band width.

Top right: A new motorized indenting press used for embossing repetitive data on metal or plastic plates, and bottom, a forms imprinter for imprinting fixed data on business forms aid in reducing the amount of routine data processing. *(Pictures by courtesy of Force and Moore, respectively.)*

Dashew Business Machines, Inc., 5996 Smiley Drive, Culver City, Calif. The firm has manufactured equipment providing original entry of data into automatic systems. Dashaplate, a basic source of data, is an embossed plate of metal or plastic, carrying basic information which can be created at speeds to 6,000 an hour by Databossers (controlled by punched tapes or cards), or manually on Datatypers.

Datamatic Corp., 151 Needham St., Newton Highlands 51, Mass. This company makes the general-purpose, high-speed data processing system, Datamatic 1000, which consists of integrated electronic units designed to sort, merge, maintain large files on tape, and perform related business processing operations. Input data may be read from punched cards or punched paper tape onto magnetic tape. Once on magnetic tape, all operations within system are automatic. Data is fed from magnetic tape into a magnetic-core internal memory, delivered to arithmetic unit; read out to magnetic tape. From tape, data is fed to the output conversation system where it may be selectively extracted, edited and printed out in a wide variety of formats on 900-line-a-minute printer.

Dennison Mfg. Co., 300 Howard St., Framingham, Mass. This firm has manufactured Print-Punch marking machines which prepare merchandise tags for subsequent automatic processing. The machines punch basic merchandise data in four- or five-channel code, simultaneously printing information (such as size, price, style number) that can be read by customer and sales clerk. Printing and punching rate is 200 stubs per minute.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 80.

Allen B. Du Mont Laboratories, Inc., 750 Bloomfield Ave., Clifton, N. J. This firm has produced line of closed circuit television which may be applied in data handling systems, providing instantaneous visual transmission of information. The equipment is not IDP.

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. The company has made, in collaboration with Addressograph-Multigraph, special-purpose electronic data processing systems for mailing operations. Inputs are from punched cards with conversion to magnetic tape and printing out of addresses at rates to 45,000 per hour. Firm also manufactures Kodak Listomatic Camera for reproduction of directories and similar publications.

ElectroData Div., Burroughs Corp., 717 N. Lake Ave., Pasadena 6, Calif. ElectroData's Datatron computer is described in the Burroughs listing.

Electronic Associates, Inc., Princeton Computation Center, Long Branch, N. J. Analog computers, designed primarily for scientific and engineering work. The Dataplotter takes data from punched cards or punched paper tapes

The stack of books and catalogs represents, according to the manufacturer, about five minutes of recording time at a tape speed of 150 in. a second. Tape handler shown is the Ampex Model FR-300.

and plots this information in continuous-line graphs. In this manner, data from electronic computers are put into graphic form.

Electronics Corp. of America, 10 Potter St., Cambridge 42, Mass. This company has produced a series of Magnefiles, electronic units, desk-size, for maintaining perpetual inventory information, with various inputs. Computation facilities also offered.

Farrington Mfg. Co., 76 Atherton St., Boston 30. Special-purpose systems, including Charge-Plate credit identification systems and Scandex, used in punching cards from inputs of printed numbers, scanned photoelectrically.

Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20. Company has presented High Speed Tape Readers, with speeds of 200 and 400 characters per second, as code converters. Reading and control by photoelectric means. Two electronic computers also have been manufactured.

Fisher & Porter Co., Hatboro, Pa. Firm makes automation for industrial application, a line of data reduction equipment used for readout from manufacturing processes.

Wm. A. Force Co., Inc., 220 Nichols Ave., Brooklyn 8, N. Y. A numbering machine for electronic data processing prints dots, dashes or specially shaped figures instead of conventional numerals. Code markings, representing serial numbers, are printed on documents like checks, order forms, and other commercial papers processed by electronic scanning. A Convex 5-

Tools of the Office

Channel Tape Coder is used on rotary printing presses to print dots corresponding to consecutive serial numbers, simulating 5-channel tape. The codes are intended for use as inputs to IDP systems.

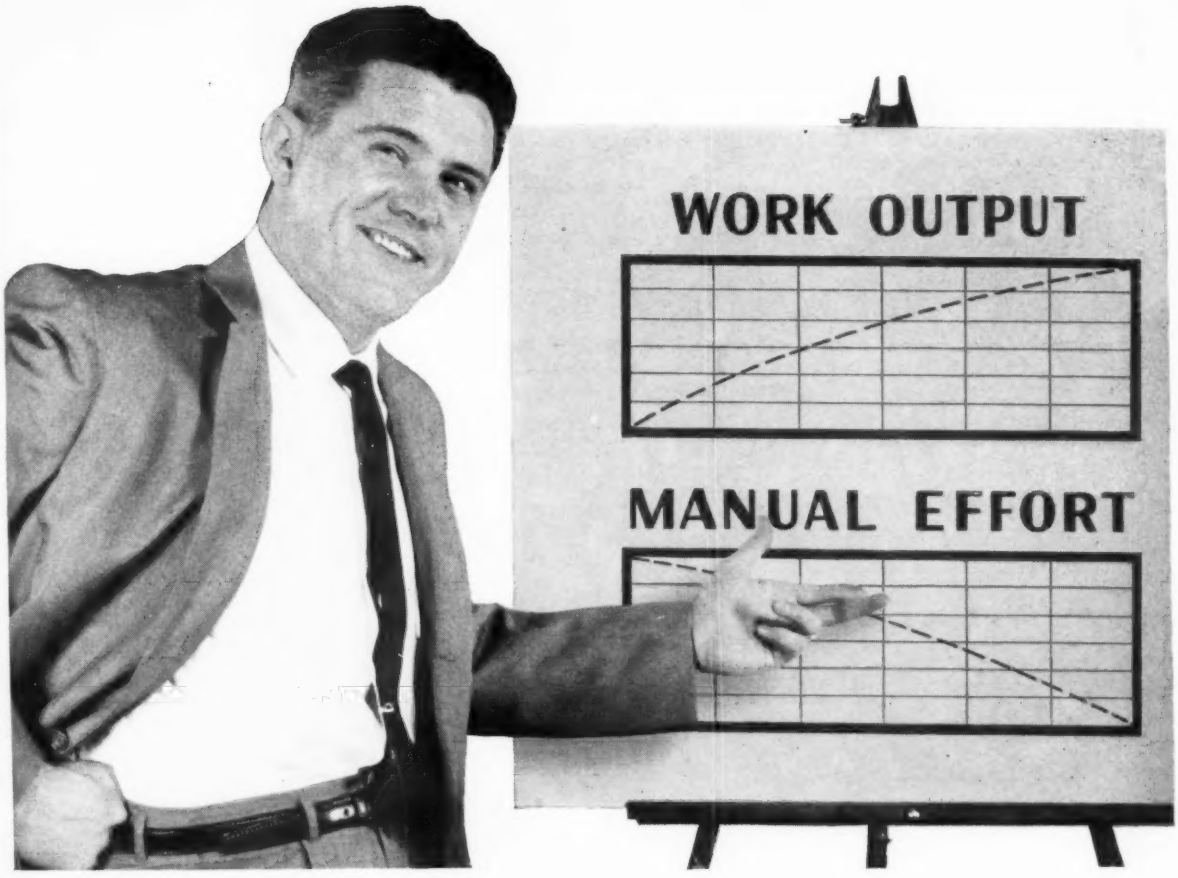
Friden Calculating Machine Co., Inc., 2350 Washington Ave., San Leandro, Calif. Company manufactures 4 models of the Selectadata, for use with IDP machines. It is a punched tape apparatus for integrated data processing systems and has a selective tape reader of electro-mechanical design. In certain models a Manual Data Selector is provided. Teledata is a tape transmitter-receiver for 5-, 6-, 7-, and 8-channel tape transmissions, and is for use at the ends of communication channels to transmit coded information contained in punched tape to a receiving location where it is repunched into an identical tape. Friden also makes the Flexowriter, Solenoid Input Adding Machine (Model ABS), Solenoid Input Printer (Model PRS) Adding Machine with Electrical Output (Model AAEO), Adding Machine with Electrical Output and Solenoid Input (Model AAEOS), Solenoid Input Add-Punch (Model PTS). The Friden Add-Punch is an adaptation of a 10-key adding machine to punch paper tape simultaneously with conventional listing on adding machine. The Model C Computyper is an automatic billing machine. Model B Computyper is operated by typist, takes price and quantity inputs from keyboard, printing complete bill automatically.

General Electric Co., Schenectady, N. Y. Firm has been developing specialized data processing equipment, some to handle bank bookkeeping, and components for National Cash Register 304 computer.

Haloid Xerox, Inc., 2-20 Haloid St., Rochester 3, N. Y. Company makes "print-out" systems including the SC-5000, which can print at rate of 10,000 characters per second, using the xerographic process, a dry, electrostatic means of forming image from on-line signals, from magnetic tape or from light transmissions. Also XeroX Copyflo Continuous Printers which, from original documents or microfilm, produce at rate of 20 feet of print per minute an 8½ x 11 in. print in less than 3 seconds.

Intelligent Machines Research Corp., 7019 Edsall Rd., Alexandria, Va. Firm produces equipment which reads printed characters, both alphabetic and numeric. Line of analyzing readers reads information and punch cards at rates from 100 to 180 a minute, and can perforate tape at speeds to 60 characters per second. For character sending operations, IMR Selfchek Type uses a common language, for both human beings and machines. The language is self-checking in numeric characters. The company also manufactures character sensing equipment used in Farrington's Scandex system for oil company accounts receivable. IMR Balance Attachment is used to provide intercoupling between adding machines and card punches. Using it, adding machines can be made to punch IBM cards. Price is about $1,500. IMR Character sensing EYE, using optical scanning and digital logic, "recognizes" typed and machine-printed characters from business documents. The recognized characters are then punched in tabulating cards, perforated in paper, tape, or recorded on magnetic tape.

International Business Machines Corp., 590 Madison Ave., New York 22. Firm produces a series of data processing systems in various capacities and sizes including, Small Data Processing Systems: 604 Electronic Calculating Punch, electronic computer for general-purpose computation. $550 monthly rental price, $25,900 selling price; 607 Electronic Calculator, electronic computer for general-purpose computation; $800-$950 monthly rental price. $37,500-$42,000 selling price; 608 Transistor Calculator, electronic computer for general purpose computation, no vacuum tubes. $2,250 monthly rental price, $118,900 selling price. All 3 machines use punched card input and output. Medium-sized Data Processing Systems: 650 Data Processing System, for general-purpose computation. Basic system uses punched card input and output, and is available with magnetic tape input and output and with magnetic disk storage as in firm's 650 Ramac. $3,750 to over $17,000 monthly rental price, $182,400 to over $850,000 selling price. 305 Ramac, data processing system for "in-line" processing of general accounting data, uses punched card input, card, printer, and typewriter output. Magnetic disk "memory" can store 5,000,000 characters of business information. $3,200 monthly rental price, $189,950



Teletype units increase work output

Reducing manual effort . . . instantaneous "delivery" service . . . automatic editing. These are some of the step-savers Teletype equipment brings to your operations—to enable you to handle more work, without additional workers.

Example—less manual input. All permanent information about customers, vendors, products—can be stored in Teletype punched tape (with typing on the tape for easy and exact identification of contents). This saves endless hours of repetitive typing and checking—gives a bonus of improved accuracy. Only variable data (quantity, delivery date, price, etc.) need be manually typed—*the tape does the rest.*

Example—instantaneous "delivery." As your sales office prepares copies of an order for its own use, Teletype equipment can "deliver" the order to appropriate plants and departments—instantaneously, without extra work. And there's no need to wait for confirmations—with *printed communications.*

Example—automatic editing. Built-in "robot brain" facilities of Teletype Model 28 equipment enable you to selectively edit information being sent to various receiving points. For instance, when Purchasing sends order information to Tabulating and Receiving Departments—the "robot brain" can omit prices from the Receiving Department copy, *automatically.*

And now the newest Teletype unit, the Model 28 ASR set, brings you even greater efficiency—with typing, tape punching, tape receiving and transmission facilities in a single, compact console. Write for free descriptive booklet today.

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Service and demonstration centers are proving of immense benefit to those companies seeking information on the installation or operation of IDP equipment. Shown above is the IDP Workshop, conducted by Standard Register Co.

selling price. Large Scale Data Processing Systems: 704 Data Processing System composed of interconnected units, designed primarily for scientific computation, with punched card and magnetic tape input. Punched card, magnetic tape, printer, and Cathode Ray Tube Recorder output. Monthly rental $44,000 and up, selling price $1,994,000 and up. 705 Data Processing System composed of interconnected units designed primarily for business calculations. Punched card and magnetic tape input. Punched card, magnetic tape, and printer input. $38,500 and up monthly rental price, $1,713,000 and up, selling price. 705-III Data Processing System composed of interconnected units, similar to earlier 705 systems, but faster and more versatile, according to the manufacturer, designed primarily for business computations. Punched card and magnetic tape input. Punched card, magnetic tape, and printer output. Monthly rental is $35,000 and up, selling price is $1,925,000 and up. 709 Data Processsing System, high-speed data processing system composed of interconnected units for both business and scientific problems; $55,200 and up, monthly rental, $2,630,000 and up, selling price.

A complete line of punched card machines including card punches, sorters, accounting machines, collators, proof machines, interpreters, and others is produced. IBM punched cards are utilized as common language. Punched Tape to Punched Card Conversion Equipment: 46 Tape to Card Punch reads alphabetic or numeric information from punched paper tape and converts it to IBM punched cards. Model 1 reads 5 and 8-channel tape, Model 2 reads 8-channel tape only. Monthly rental price—Model 1—$140, Model 2—$135; selling price—Model 1—$6,300, Model 2—$6,050. 47 Tape to Card Printing Punch reads alphabetic or numeric information from punched paper tape, producing IBM punched cards. Information may be printed along top of card. Model 1 reads 5 and 8-channel tape. Model 2 reads 8-channel tape only. Monthly rental price—Model 1—$160, Model 2—$155; selling price—Model 1—$7,200, Model 2—$6,950. Punched Card to Punched Tape Conversion Equipment: 63 Card-Controlled Tape Punch reads alphabetical and numerical information in IBM punched cards and records information in form of perforations in 5-channel telegraphic tape. $75 monthly rental price, $3,600 selling price.

Data Transmission Equipment: Data Transceiver-Model 65 reads information in IBM punched cards and transmits it over leased line telephone or telegraphic circuits to a second Transceiver which simultaneously duplicates the original cards. The machine automatically perpetuates data in IBM punched cards. Monthly rental price $175, selling price $8,100. Printing Data Transceiver-Model 66 reads information in IBM punched cards and transmits it over leased line telephone or telegraph circuits to a second Transceiver which simultaneously duplicates original cards. Information punched may be printed along top of card. Data is automatically perpetuated. Monthly rental $195, selling price $9,500. Automatic Document Preparation Equipment: 858 Cardatype Accounting Machine types on document either from information punched in IBM cards, keyed into Auxiliary Keyboard, or from manual operation of typewriter. With optional units, machine can add, subtract, and multiply, type additional or different forms, and punch output in either paper tape or card. Monthly rental price $225-525, selling price $12,000-27,400. Merchandise Tags to Punched Cards Conversion Equipment: 549 Ticket Converter converts punched tickets into IBM cards, or can be used as an automatic gang punch. Can be attached to IBM 402, 403, 407, 416, and 419 Accounting Machines for summary punching of balance or total cards. Monthly rental price $250, selling price $12,500.

Typewriters with By-product Punching Equipment: 824 and 826 Typewriter Card Punches prepare IBM punched cards for accounting use as automatic by-product of typewriting operations, and consist of IBM electric typewriter and printing (826) or non-printing (824) card punch. Monthly rental prices from $95-$145, selling prices from $3,700-$7,400. 884 Typewriter Tape Punch creates 8-channel paper tape simultaneously with typewriting operation. Tape punch unit can be controlled for coding into tape of all parts of information being typed. Monthly rental price $75, selling price $3,750. *All prices quoted are exclusive of tax.*

International Standard Trading Corp., 22 Thames St., New York. Firm has made communications equipment in a wide range, and is an affiliate of the International Telephone & Telegraph Corp. Included are a variety of typewriter models and related equipment, for many IDP functions.

International Telephone & Telegraph Corp., 67 Broad St., New York, N. Y. Communications facilities. See listing above for International Standard Trading Corp.

The Jacobs Instrument Co., Bethesda 14, Md. While information on current activities was not available at press time, Jacobs has made electronic digital computing equipment.

A. Kimball Co., 444 Fourth Ave., New York 16. Company manufactures the "75" Punch Print Machine for encoding as many as 29 columns of punched and printed data into tickets and tags to serve as automatic input for punched cards and punched paper tape, and as input for integrated data processing systems. Machine rental is $75-$85 a month. Kimball Portable Punch is slide-set and is used

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for encoding 12 additional columns of variable data in the Kimball Punch Print Ticket. Portable Tag Reader automatically transfers machine language data stored in Kimball Punched Marked Tag to punched paper tape, while tag is attached to item.

Kleinschmidt Laboratories, Inc., County Line Rd., Deerfield, Ill. The company produces a line of teletypewriting equipment for use in communications. The TT-195 High-Speed Typing Reperforator punches and prints on paper tape at the rate of 750 words per minute, or 75 characters per second. It is used for receiving coded communications. The firm's line includes teleprinters, transmitting units, typing perforators, and accessory switching and selecting equipment.

Laboratory for Electronics, Inc., 75 Pitts St., Boston 14. Firm has made large-scale general-purpose electronic data processing system for both in-line and off-line data processing in applications such as inventory control, payroll, production control, and so on. The equipment is designed for random access work, and magnetic drum storage is used.

Librascope, Inc., 1607 Flower St., Glendale 1, Calif. Company has manufactured a small electronic computer, distributed by Royal Precision Corp. See listing under that company.

Litton Industries, 336 N. Foothill Rd., Beverly Hills, Calif. This company has made small electronic calculators and other equipment.

Monrobot Laboratory, Monroe Calculating Machine Co., Morris Plains, N. J. Firm has produced medium-size electronic data processing systems.

Monroe Calculating Machine Co., 555 Mitchell St., Orange N. J. Firm has presented a line of adding and data processing accounting machines, some of which have been adapted to punch paper tape with codes of 5, 6, 7, or 8 channels for subsequent entry into IDP systems. Some of the machines can operate a card punch directly. Monrobot IX is a desk-size electronic computer used for application of automatic invoicing and other accounting operations. Price, about $7,500; equipment may be rented.

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. Firm offers IDP equipment of various types. Model 38-M accounting machine combines multiplying and bookkeeping on such jobs as payroll calculating with wage accrual, billing and accounts receivable, and inventory control. For payroll and inventory control and similar jobs, punched paper tape recorder may be linked to machine to produce data for analysis by electronic or other automatic means. Machine has standard keyboard and prints whatever it multiplies. Sales-Tronic system uses sales register, media reader which deciphers pre-punched price tags, customers' and clerks' tokens, and a paper tape recorder which takes inputs from the tags and tokens and punches a paper tape for later automatic processing. Completely-transistorized 304 electronic data processing system, a general purpose system, uses an electronic computer, magnetic tape memory units, media converters, and high-speed input and output equipment. Post-Tronic equipment reads magnetic codes on paper documents, and is currently used largely for bank accounting functions.

Potter Instrument Co., 115 Cutter Mill Rd., Great Neck, N. Y. Firm has manufactured components for use in IDP systems, including high-speed printers taking inputs from magnetic tape, punched paper tape, and directly from computer systems; random access memory units; magnetic tape handling equipment; and punched tape readers. Current information not available at press time.

Radio Corp. of America, Front & Cooper Sts., Camden, N. J. Firm has manufactured large-scale electronic computers of Bizmac line, at least one of which is in the 4 million dollar class. Inputs include punched cards, punched tape, keyboards, and so on. A variety of outputs is available. One machine is an electronic printer capable of exceptionally high output speeds, it is reported.

J. B. Rea Co., 1723 Cloverfield Blvd., Santa Monica, Calif. Company has made a line of Readix electronic computers in the small- to medium-size class, for general purpose use. Readix Dual Computer uses punched cards and magnetic tape, is a completely decimal computer, and is equipped to handle both research and development work and such business operations as payroll, sales analyses, labor distribution problems, and so on.

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. This company has introduced an electronic punched tape typewriter, a development of the common language concept, which automatically creates and reads paper tape that activates other equipment and wire communications systems. When used as an ordinary electric typewriter in preparing source documents, it automatically translates everything or selected data the typist writes into a punched tape for subsequent automatic processing; when fed the punched tape prepared by it or other machines, it automatically reads and types out information at the rate of 120 words a minute. The machine is available in 3 different models: a tape punching unit, a tape reading unit, and a unit that combines both operations of punching and reading. Carborundum Co., manufacturer of abrasives and refractory products, has produced a "total systems" approach to electronic data processing, which, according to the firm's president, General Clinton F. Robinson, embodies complete automation of all basic paper work procedures of the company beginning with customer orders. This Univac Data Processing System in use at Carborundum employs 5 basic parts: information translator; information feeders, the "brain" or "memory" system; printers; supervisory control center; and also 2 others: Flexowriters, and a communications network which links the field locations, and plants in the United States with the Univac Computer Center in Niagra Falls, N. Y.

The firm presents a wide line of electronic computers and punched card equipment. Univac II is the newest in a line of digital electronic computers, with magnetic core storage. Accessory equipment includes Uniservo units, reading from and writing on metal magnetic tapes; high-speed printers; punched-card-to-magnetic-tape and magnetic-tape-to-punched-card converters; Unitypers for typing directly on magnetic tape, and other equipment. Univac 120 and Univac 60 are smaller computers using punched card inputs, with particular adaptability to such operations as billing, production control, statistical work, scientific and engineering problems. Univac File-

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the page 80.

Computer, a medium-size system, features random access and is intended for business operations of the "in-line" type. Large Univac systems are also produced, designed primarily for scientific and engineering work. Other equipment includes paper-tape punching typewriters, punched card-to-punched-tape and punched-tape-to-punched-card converters, high-speed printers, Point O'Sale Recorders for reading pre-punched merchandise tags and converting data into punched tape, and magnetic tape storage facilities in mobile trucks.

The company also manufactures an extensive line of punched card equipment, including punches, reproducers, calculating punches, sorters, tabulators, and so on.

Royal Precision Corp., Westchester Ave., Port Chester, N. Y. (*Products marketed by Royal McBee Corp., at same address.*) Firm manufactures the LGP-30, a desk-size single-address, fixed point, binary, stored program electronic computer with particular application to engineering and scientific problems. Magnetic drum is used for memory. Unit is mobile and accepts information from punched tape with 4, 5, or 6 channels. Size permits unit to operate on standard 115-volt power supply. It may be leased for $1,100 a month. The computer is manufactured by Librascope, Inc., a subsidiary of General Precision Equipment Corp. The new Keysort Tabulating Punch simultaneously code-punches quantities in body of Keysort cards, accumulates in machine and prints detail tape. Tape totaling capacity is 11 digits.

Scriptomatic, Inc., 300-16 *N. 11th St., Philadelphia* 7. This firm produces the 101-S addressing machine, which is equipped for reading either IBM or Remington Rand punched card fields. This means that the equipment can be programmed to selectively print, sort or count, based on the same fields of holes used by the punched card machines. Also manufactured is a full line of data writing and addressing equipment which print from punched cards, ledger cards and many other types of card medium. Prices range from $5600 to $15,000. Rental available in certain areas.

Shepard Laboratories, Inc., Broad St., at Park Ave., Summit, N. J. Firm manufacturers an Electronic High-Speed Typer operating on the rotary principle, which has type-wheels that spin continuously and in unison at 600, 900 or 1200 rpm. There is no interference between reciprocating parts, according to the manufacturer, and typing rate is 600 to 900 lines per minute. The Electronic Typer is part of the company's Electronic High-Speed Output System, which includes the Servo Transport Digital Tape Reader, Electronic Decoder, and Electronic Firing Group. The Electronic High-Speed Typers are in use as the output facility for RCA Bizmac Electronic Computers, the U. S. Navy, U. S. Army and other large organizations. Electronic Typer with Firing Group is priced at $36,100; the Digital Tape reader is priced at $14,000. Both prices are f.o.b. No rental provisions are offered.

Soroban Engineering, Inc., Box 1717, Melbourne, Fla. Company makes line of IDP components including tape readers for reading 1 or 2 perforated paper tapes. High-speed punches to perforate paper tapes with codes of 5, 6, 7, or 8 channels at rates to 240 code groups per second are also available. The firm produces verifying punches to verify data in punched paper tape; coding keyboard is used to compare re-entry of data with data in tape. Comparators to compare and detect discrepancies between 2 tapes intended to be identical are made by this company.

The Standard Register Co., Campbell & Albany Sts., Dayton 1, Ohio. Firm produces Stanomatic equipment which is designed to read magnetic codes on printed documents and convert information into a number of different common languages as required. Codes in 5, 6, 7, or 8 channels are pre-printed by special typewriters, registers, bookkeeping machines, imprinters, or at the factory when the forms are printed. Ink or carbon is read electronically in the machine. Outputs may be punched cards, magnetic tape, or punched paper tape, in codes with from 5 to 8 channels. Stanomatic may be used for utility billing, insurance company premium collections, chain store operations of inventory control, cash balances, processing retail credit sales by oil companies, and so on.

Next Month:

Adding and calculating machines; bookkeeping and accounting machines, systems and equipment

Stanford Research Institute, Menlo Park, Calif. Not a manufacturer, the Institute carries on research and development of high-speed electronic computing systems with special attention given to new components such as transistors, for use in small electronic systems. Much of the cost of housing bulky tube circuits, as well as most of the air conditioning and cooling expense, is eliminated by such developments as transistors and other innovations which reduce size and other factors of systems. Now in development, in SRI's Engineering Division is a prototype TV office duplicator.

Stewart-Warner Electronics, 1300 *N. Kostner Ave., Chicago* 51. Firm has produced the S-W Electronic Data Processing Unit, a small digital computer, desk-size, using standard electrical power sources. Equipment is designed for business applications such as sales analysis, inventory control, billing, order processing, etc. Datafax also has been made. It is facsimile equipment used for transmission of data over telephone circuits.

Stromberg-Carlson, Div. of General Dynamics Corp., Rochester 3, *N. Y.* This firm produces a new print-out system, the S-C 5000 which, according to the manufacturer, is the "world's fastest" in its field. It is to be used in conjunction with electronic processing and printing of computer data, and is composed of the Charactron Shaped Beam Tube made by Stromberg-Carlson, and the Haloid Company's Xerox Copyflo printer. The machine will print the output of electronic computers at 4,680 lines per minute, it was announced by both companies. A new loudspeaking intercommunication system, transistorized for compactness and quiet operation is made by the Stromberg organization, named the Communicator. It is to be used for office intercommunications. Power consumption is about equal to that of an electric clock.

Systematics, Inc., 60 *E. 42nd St., New York* 17. Firm is making 5-channel alphanumeric tape-to-card converter, as well as an 8-channel converter. The new 5-channel alphanumeric converter will handle the entire

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alphabet and all numbers, as well as special codes. A wide line of Intercouplers is also in production, including features to interconnect standard business machines with card punches, tape punches, or other equipment for transferring data from the business machine to a common language medium. The 5-channel alphanumeric converter is priced at $3,200; 8-and 5-channel converters are priced at $2,450. Model N 525 Input device for attachment to the NCR Class 31 Series accounting machines has recently been developed. Depending upon the combination desired, Systematics punched card intercouplers range in price from $1,850 to $3,450. Punched tape intercouplers from $2,500 to $3,600. Their input devices, read by cards, range from $2,000 to $3,600; if read by punched tape, from $2,600 to $4,250.

Technitrol Engineering Co., 1952 *E. Allegheny Ave., Philadelphia* 34. Firm has produced custom-built digital data handling equipment, and components from which electronic computer systems can be assembled. Included are the basic units of the data handling system itself and the accessory units such as power supply, cabinets, etc.

Telecomputing Corp., 12838 *Saticoy St., North Hollywood, Calif.* Company has manufactured the Point O' Sale Recorder for reading pre-punched merchandise tags and producing punched paper tape carrying the information coded in the tags, plus additional data entered manually by keyboard as necessary. Tape is then available for automatic processing in other IDP equipment. Marketed by Remington Rand.

The Teleregister Corp., 445 *Fairfield Ave., Stamford, Conn.* Company has made specialized equipment, including passenger inventory control systems used by transportation companies to keep track of reservations made and remaining space. New reservations when made are automatically taken into account to keep space status up to date. Equipment is used in network systems, with information records maintained centrally.

Teletype Corp., 1400 *Wrightwood Ave., Chicago* 14. Firm has offered extensive line of communications equipment, such as page printers, tape perforators, transmitter distributors, typing perforators, message relay equipment, and other IDP facilities. Some page printers, transmitter distributors, and perforators operate on 6-unit code.

Typatape, Inc., 60 *E. 42nd St., New York* 17. Company has developed method of recording data in common language form by means of mechanical attachments to standard business machines. It prints a 4-channel numerical code on paper tape ¼-in. wide, as a by-product of normal machine use. Tape is fed into a photoelectric scanning converter. Recorder is priced at $900; converter is priced at $5,000.

Underwood Corp., 1 *Park Ave., New York* 16. Dataflo, an integrated processing system based on "building block" concept of merged electromechanical equipment produces a continuous chain of business communications as a swift by-product of any original typewritten record. The Mastertyper unit, a standard electric typewriter with 4 bank keyboard and automatic finger-letter code, prepares original business documents such as invoices, waybills, etc. Data can be entered from punched paper tape as well as manually. The Elecom is a small digital electronic computer and accounting machine priced at about $30,000, with a magnetic disc storage unit. Printed output is provided by 1 or 2 accounting machine carriages. One or 2 paper tapes may be used for input, and output may be directed to 1 or 2 such tapes. Machine is designed for business applications.

Victor Adding Machine Co., 3900 *N. Rockwell St., Chicago* 18. Custom line adding machines are equipped to punch paper tape in 5-, 6-, 7-. or 8-channel codes. The machines are used to create common language tapes at the first machine writing of information. Tape is produced as automatic by-product of normal adding machine function. Accuracy is also automatically verified. Equipment so far installed ranges in price from $900 to $1,200. The Digit-Matic is a digital printer which can list or list and perform arithmetical functions, reading uncoded decimals with inputs from common language codes through translating units, and can print at speeds up to 3 10-digit lines per second. It may be used as an output from automatic systems. Victor Punched Tape Analysis System consists of a Duo-Matic cash register, which automatically reproduces a punched paper tape as a by-product of ringing up a sale on the cash register, and an Analysis Unit, which reads this tape.

The Western Union Telegraph Co., 60 *Hudson St., New York* 13. Company has produced IDP facilities which include nationwide network of transmission lines, and wide range of communications devices, such as sending and receiving page teleprinters, tape perforators for punching paper tape, switching center equipment, automatic numbering machines, sorting equipment, and facsimile equipment. Type 19 sets are also made by this firm to record information in punched tape and transmit it.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 80.

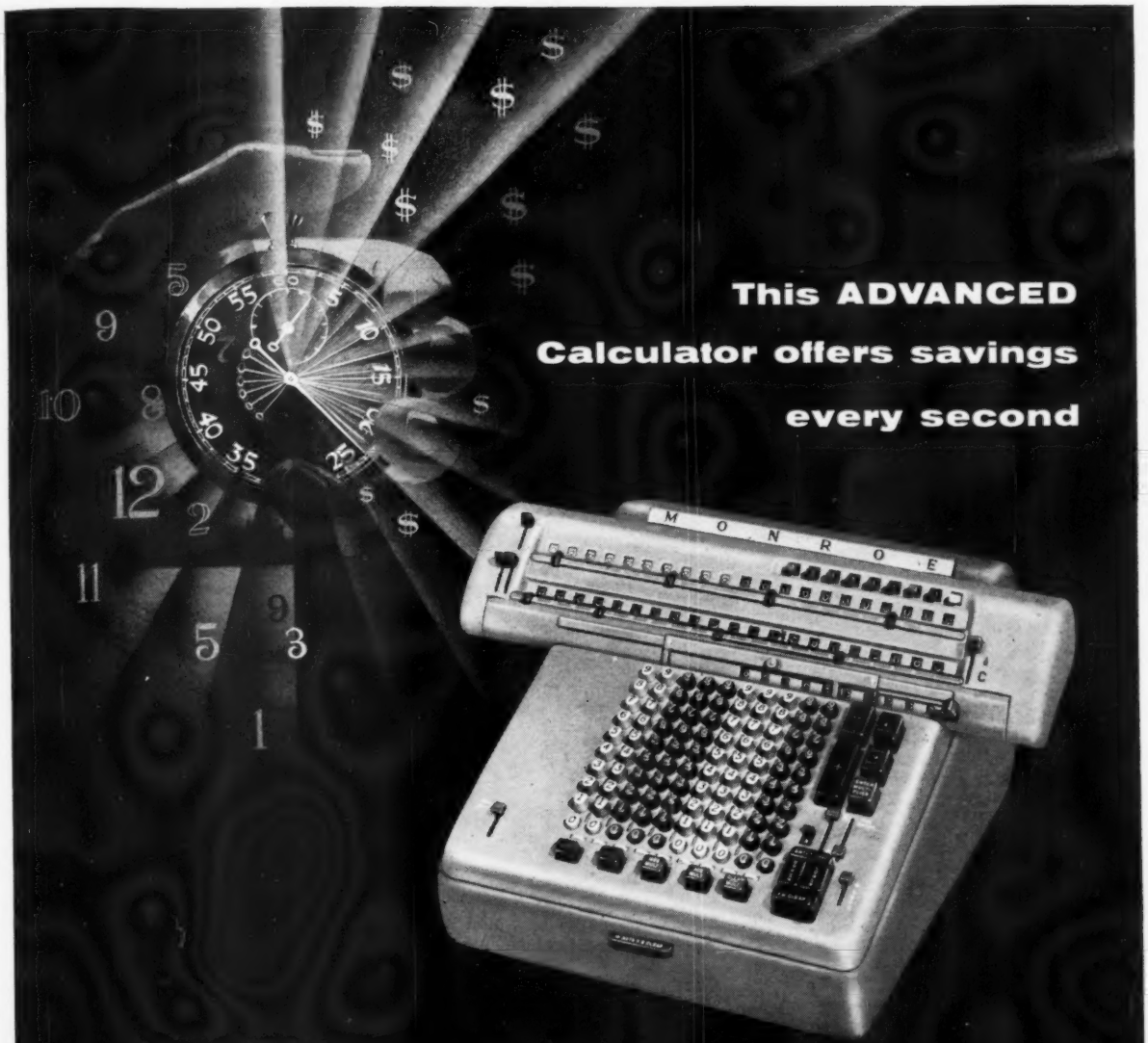
Accessories and Services

American Lithofold Corp., 53 *W. Jackson Blvd., Chicago* 4. Electronic Check has pre-punched tab card checks, on continuous marginal punched forms, with a side-stub perforation, mounted on part 2 of the form, for use with tabulators, Teletypers, and other equipment. Pocket Form for IDP tapes carries tapes in built-in pocket on back of form. Hand filing or fastening with clips or staples is unnecessary. Electronic Remitter incorporates addressed envelope with account number, name, address and amount of statement as an integral part of invoice or statement form. The return envelope stays with the statement until remitting customer makes payment.

Cycle Equipment Co., 17480 *Shelburne Way, Los Gatos, Calif.* Company has manufactured line of Universal Tape Minders and Standard Model Tape Minders for handling punched paper tape. The units are slave machines which start and stop automatically as tape is fed or as feeding ceases. Designed for communications systems.

Dresser Products, Inc., 152 *Wheeler Ave., Providence* 5, *R. I.* Firm has produced a line of electric and manual folders, winders, and rewinders for punched tapes, and also for adding machine tapes. Also, various filing

(*To page* 59)



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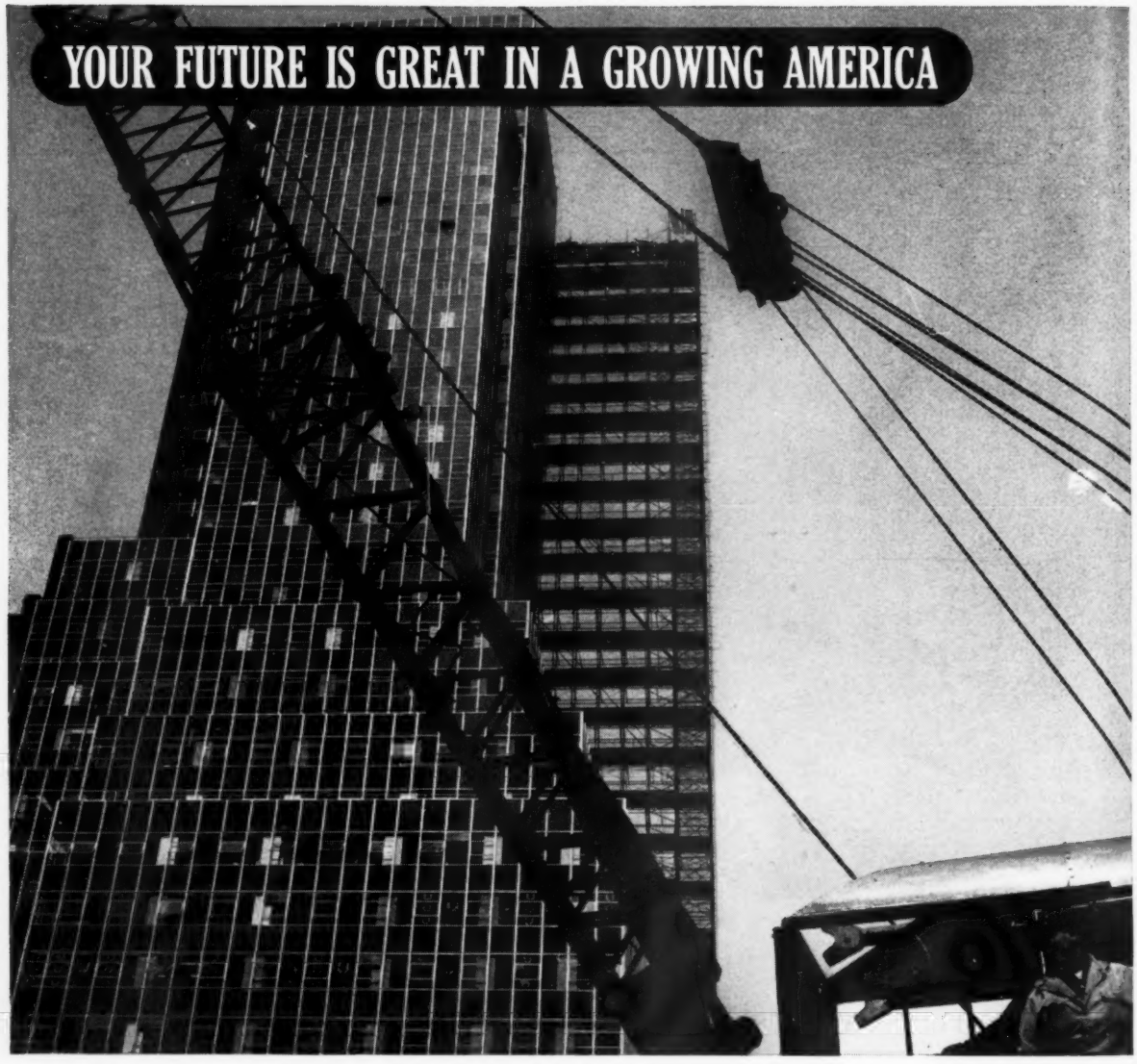

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units for tapes, including file folders, binder pockets, etc.

Monarch Metal Products, Inc., New Windsor, N. Y. Company has made line of accessories and filing equipment for punched cards, also series of storage cabinets and trays for storage of magnetic tape. Tape trucks have also been produced.

Moore Business Forms, Inc., 900 *Buffalo Ave., Niagara Falls, N. Y.* This firm makes Model 425 imprinter detacher for continuous forms or continuous tabulating cards. It will imprint, slit-off margins and detach forms to be imprinted, remove margins, detach and stack forms in numerical sequence. Offered is an extensive line of forms for use in Automated Data Processing systems, with research facilities for the development of the forms required in such systems. Also, the Formaliner and Vertical Spacer, devices for handling forms. Decollators and stands, imprinter-detachers, deleaving attachments, and other equipment are also available.

The Standard Register Co., Campbell & Albany Sts., Dayton 1, *Ohio.* Company's IDP Workshop is used for the design and testing of forms for use in IDP systems. The facilities are available for research. It also offers forms for IDP, together with accessory equipment for the handling of forms.

Systems Sales Co., 13 *Broad St., Binghamton, N. Y.* Company has produced line of storage equipment, sorting stands and carts for use in handling and storing tabulating cards, and for storing single, double, and triple control panels. Accessories for use with electronic computers.

Tab Products Co., 57 *Post St., San Francisco* 4. Company has produced accessories for punched card systems including files, card punch desks, racks, card trucks, control panel storage equipment, and so on. A line of accessories for magnetic tape has also been made, including storage cabinets, reel handling equipment, mobile trucks, and special type equipment.

Uarco, Inc., 7902 *S. Ashland Ave., Chicago* 20. Firm produces a bursting machine which separates continuous tabulating cards, with a speed of 600 cards per minute. The firm also makes business forms, deleavers, and other forms-handling equipment.

(*To page* 62)

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Semi-annual Index

January-June, 1958

Association News

AMA conference hears "progress reports" on E.D.P. installations
by Frederick Vogel ..... April, page 25
NOMA announces schedule for Chicago conference and business show ..... April, page 82
Chicago hosts NOMA conference ..... May, page 39

Automation in the Office

How to prepare an office for a computer installation ..... January, page 30
Basic steps in programming a computer for a single operation
by Ben Conway ..... February, page 28
Spread of office automation slowed by cautious business mood in 1957
by Robert M. Smith ..... Yearbook, page 10
Operations research and its role in the office management picture
by David B. Hertz ..... Yearbook, page 14
Why small companies may need automation even more than larger concerns.
by Robert M. Smith ..... June, page 31

Layout and Equipment

1957 "Office of the Year" Awards announced January, page 25
Publishing firm adds a modern touch to its 50-year-old address ..... January, page 48
Don't overlook older office buildings when planning new office space ..... January, page 56
Decor expresses organization personality in savings institution.
by Frederick Vogel ..... February, page 32
American Colortype places emphasis on "big office" advantages
by Frederick Vogel ..... March, page 36
"Office of the Year" awards, 1957
by Frederick Vogel ..... Yearbook, page 35
Advertising agency promotes itself, its clients in bright new offices ..... April, page 36
Pfizer International opens new, modern offices ..... May, page 34
Dramatic C. I. T. building adds impetus to office boom in New York
by Frederick Vogel ..... June, page 34

Personnel

How to schedule work loads for a "floating force"
by Ralph Fairbanks and Jerome Hoffman ..... February, page 23
Our employees helped us halve our forms load
by John P. Boxshus ..... February, page 30
What are the new trends in insurance, health protection for office workers?
by Robert M. Smith ..... March, page 25
How to set up effective and equitable promotion policies
by Robley D. Stevens ..... March, page 40
End to personnel shortage sighted even if economy enters another boom
by Edith Conner ..... Yearbook, page 18
Management development: are we stressing programs over people?
by Jack B. Collins ..... Yearbook, page 20
How office managers rate job performance: a measurement guide.
by Robley D. Stevens ..... May, page 40
Clerical personnel pool swelled by June high school graduates ..... June, page 38
Is your indoctrination of new personnel as scientific as their selection?
by Raymond Dreyfack ..... June, page 41

Special Features

What's ahead for the office in 1958–review and forecast.
by Robert M. Smith ..... January, page 19
Suburban bank proves mechanization can pay in small office
by Frederick Vogel ..... January, page 22
Employing the "art of command" in company communications.
by Stanley H. Mansbridge ..... January, page 28
Long range planning is only effective when it, too, is planned
by Ernest W. Fair ..... January, page 43
Does your organization really welcome new ideas?
by G. R. Bell ..... February, page 68
The how, when and where of effective procedure audits
by Thomas G. Horti ..... March, page 31
How one small office made its work measurement program work ..... March, page 60
Let's not overlook the physical aspects of Communications techniques
by H. V. Kellam ..... April, page 28
Why clearly defined authority levels are basic to good organization structure.
by Stanley H. Mansbridge ..... April, page 33
New survey suggests job tension is fault of individual, not job ..... April, page 35
Systems audits–the safe way to cut clerical costs
by Ralph W. Fairbanks ..... May, page 29
How to plan and carry out an office moving assignment
by Robert C. Montgomery ..... May, page 32
U. S. World Trade Fair exhibits products of 43 nations at New York's Coliseum ..... May, page 42
How to make your reports clear, concise and effective
by Maryland Manger ..... May, page 64
How to make organization charts effective and useful
by Eugene J. Revolon ..... May, page 74
Are methods men responsible for many of their own current troubles?
by Charles Saunders-White and David R. Bywaters ..... June, page 43

Systems Design and Methods

How a functional file can aid in forms control
by Ray Marien ..... January, page 26
How streamlining our order processing helped all our paperwork operations.
by Matthew R. Parisi ..... February, page 35
Bank reduces account posting to single operation
by Frederick Vogel ..... March, page 28
Why can't we standardize forms for intercompany communications?
by Richard Paulson ..... March, page 33
Systems planning in a cost-cutting era; what it can and must do
by Allen Y. Davis ..... Yearbook, page 24
Let's protect profit by a "second look" at paper processing costs.
by Alan C. Negus ..... Yearbook, page 27
How we developed a records program to meet current and future needs.
by Harry S. Hughes ..... April, page 31
How we upped invoice output in less time with less help
by W. E. Tully ..... May, page 37
How a change in purchase order forms simplified inventory control ..... June, page 37

Tools of the Office

by Robert Beeman

Wardrobes and lockers; storage equipment ..... January, page 38
Numbering machines, time recorders and Water Coolers ..... March, page 45
stamps, and check devices ..... February, page 48
Tools of the office series ..... Yearbook, page 59
Air conditioners; fans and air circulators ..... April, page 44
Acoustical materials; floor coverings; overhead lighting equipment; movable partitions ..... May, page 48
Mailroom equipment; addressing equipment June, page 50

design of these statements sometimes included space for computations to be entered when a separate statement was submitted for each settlement, in which case, using the old hand methods, clerks rubber-stamped the form and inserted in the stamped space the figures computed on the desk machines. More often than not, however, the purchaser settled for many tracts with one check and listed the figures on the check stub, so that a separate form of—a "royalty statement"—had to be filled out. This form included space for insertion of Midwest's tract number (which had to be looked up from a coding card file), interest percentage, farm name, date posted, period covered, the company's share of barrels, gross value, production taxes, net value, from whom received, and their reference number. A separate statement form printed on stock of another color and with barrels listing omitted, was provided for gas royalties. If gas and oil purchases were included on the same statement for a property, Midwest always made a breakdown between the two at this point.

After interest had been coded and calculated and the statements were complete, they would be hand-sorted to state, tract, lease and royalty, district, oil and gas. Then they would be posted to ledger cards on the bookkeeping machines, recording the net production, gross value, production taxes and net value. A carbon transcript of the postings served as an oil and gas sales summary.

Performing these steps involved from five to ten people throughout the month. Five people were busy nearly full time with day-to-day calculations. During the peak period when receipts mounted, ten were frequently used. Just sorting the statements into the various categories was a gigantic task and took two to three days. Virtually the entire accounting staff of the home office in Denver was called in to help complete this work so that a statement could be sent out on schedule. With Midwest's small accounting staff it was a great handicap to have to take people from their own closing work at this time of the month. The job was not only time consuming; it was deadly in its monotony. The level of errors was, as might be expected, relatively high.

Since mechanization, the repetitive tasks have been assigned to machines; and recurring information as well as commands which direct the calculation of net percentages have been punched into a set of master cards. The pre-punched masters contain the information needed to convert gross to net figures. In addition to percentage of interest figures, they contain a purchaser reference number, his tract reference number, Midwest's field number, tract and subdivision number which identifies type of interest (lease or royalty), state, and district. The company prepares separate master cards for oil and gas production.

Detail cards punched

As checks are received, statements are stamped with the date received, remittance number, and amount received. After running tapes to balance the checks with the amounts inserted on the statements, the bundles are turned over to the key punch operator, who produces a detail card for each settlement by punching the purchaser reference number, purchaser's tract reference number or name if he uses no number system, the period covered, remittance number, the 100 percent production figures, 100 percent value, and 100 percent production taxes.

Then a trailer card is key punched with the purchaser's number, date received, remittance number, and total amount received for each check. This trailer card is the last card of the group and has a designating punch so that it can be subtracted from the net amounts which are calculated on the detail cards for each remittance.

After the key punching operation has been completed, the cards are sorted by the purchaser reference number, then by the purchaser's tract reference number or name, and then divided into oil and gas cards. Trailer cards are dropped out and the detail cards are match-merged with the set of master cards.

After the master and detail cards have been collated, they are run through the 602A Calculator, which reads off the information as to lease, royalty, field, our tract number and subdivision, and cuts this information into the detail cards. At the same time, it takes the net interest percentage from the master card and multiplies the 100 percent volume, tax, and value figures. The computer punches the resulting net figures into the right-hand side of the detail card, flips out the detail and master cards, and sets up the next problem.

The cards are then sorted back to remittance number and day received. The master cards having been ejected, the trailer cards are collated with the deck, falling into place at the end of each group of cards making up the remittance.

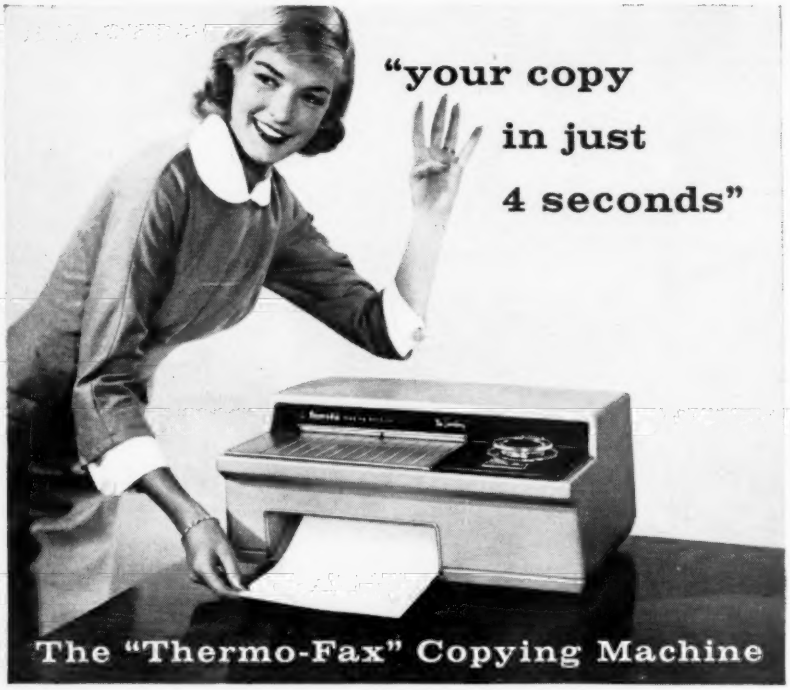
The cards are now ready for the daily sales run on the 402 Tabulating machine. All the information in the detail cards is listed on this run, and at the end of each group of detail cards bearing the identical remittance number and date (indicating they were paid by the same check), the trailer card prints the total amount of the check, which it compares to the total of the amounts listed for the detail cards, subtracts it, and prints the variance, if any, in the difference column.

These small penny variances, which frequently crop up, are traceable to differences in carrying out decimal interests and in rounding off. If a large variance appears, it indicates some error in paying or processing the data and further investigation is necessary to locate the difficulty. After any corrections, the penny variances, plus or minus, added to the detail net amounts will balance to the daily check tapes.

Provisions have also been included to allow Midwest to make certain accounting adjustments as needed. For example, in some cases a purchaser will remit the entire amount and we have to pay the other working interest and royalty owners. For these accounts, a credit card is cut for the tab runs that will reduce the total value to the net figure. Sometimes, no activity will be reported for a well or tract. The legend "no run" is punched in a card for that property and the card will show up on the sales report. This signals management to check into the status of this property, if it appears to be warranted.

At the end of the month, after each daily sales report has been balanced, the cards are sorted in rotation by lease, royalty, state, district, field, tract, by oil and by gas, and summaries are tabulated for each breakdown. Quarterly reports and an annual report are pre-

(*To page 76*)



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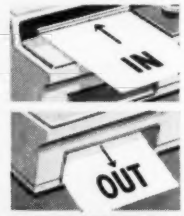

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Tools of the Office

Visirecord, Inc., Copiague, L. I., N. Y. This firm offers a variety of equipment for storage of IDP common language media, including filing cards of the "vertical-visible" type, with pockets for punched tape, or with cards themselves capable of being punched along an edge with IDP codes. Also offered are plastic tape panels, plastic channel cards, and Visisleeves, which provide visible indexing for use in random sequence filing and finding of tape packs of variable lengths.

Wheeldex & Simpla Products, Inc., 40 Bank St., White Plains, N. Y. Firm manufacturers mechanized rotary card files and offers equipment for housing IDP tapes for ready accessibility, either alone or in combination with related records. Simplawheel and Simplafind mechanized files may be used as the basic housing units. Simplawheel equipment is priced from $600 to $1,800; Simplafind equipment is priced from $3,000 to over $4,000. Wheeldex Portable Line consists of many smaller models carrying from 1,000 to 4,000 cards. Other Wheeldex models, either motorized or manual, contain from one to 5 wheels, hold from 4,000 to 30,000 cards per cabinet.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 80.

Whiteford Laboratory, 420 Market St., San Francisco 11. Company has produced electric winder for common language tape with variable speed and tension, and other features, designed to operate automatically according to variations of output.

ERRATUM

In the "Tools of the Office" Section of *Office Management* for June, page 64, the classification-heading "Postage Metering Machines" was omitted. This heading would have segregated the metering machine equipment of Pitney-Bowes, Inc., from the firm's units listed under "Postal Scales", the previous classification. Pitney-Bowes, of course, manufactures both postal scales and postage metering machines. The editors regret this error.

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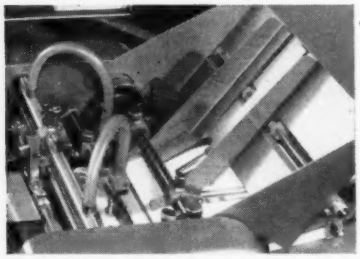

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Space planning—

(*From page 37*)

building, with exterior shape and dimensions keyed to requirements of the third floor tabulating department.

George M. Ewing Company of Philadelphia and Welton Becket and Associates of Los Angeles, the architects, designed the building around these space requirements. In other words, the function of the building determined the design and the architects created a structure around this function. Meanwhile our firm handled the interior designs, translating layouts into working drawings, and supervising the interior construction. We also specified furniture and furnishings. Gulf describes the result of this collaboration as "a functional office building of charm and character."

Unusual features which are designed into the interiors include a new acoustic ceiling and lighting module which provides standard illumination with 30 per cent fewer fixtures than normally would be required. There is a pneumatic tube system for interoffice communications. Fiberglas drapes are used on all window walls in work areas for sun control and better acoustics. Acoustical fiberglas ceiling panels help keep noise to a minimum.

L-shaped desks, used generally throughout the new building, provide extra space, greater freedom of movement and more efficient operations. Basic color scheme of the furniture, a two-tone gray, blends harmoniously with various soft colors of office walls. Stock steel furniture components were used in non-stock groups to provide more "custom-built" pieces for desks and other office furniture.

Another example of modern space planning is the new $20 million Interchurch Center in New York City which will contain 440,000 square feet of office space. Architects are Voorhees Walker Smith & Smith of New York and Collens, Willis & Beckonert of Boston. Michael Saphier Associates did the space planning. It is the first building of its kind in this country and will be the national home of Protestant, Anglican and Orthodox churches in America.

We began preliminary planning for the building two years ago, with a job-study of functions and operations of all tenants to determine the office layouts best suited to their present and

future needs. This included a complete furniture and equipment inventory, a survey of work and traffic flow and a study of special services and requirements.

Based on this job-study, our firm drew up furniture and floor plans for all tenants and coordinated office layouts with the architects. We also collected information on tenant needs for common facilities such as meeting rooms, exhibit rooms, a 300-seat chapel and a cafeteria, which were planned by the architects.

The Interchurch Center has now retained us to do all necessary drawings to make certain that interior construction conforms with approved layouts and building standards. This includes partition plans, ceiling plans, door schedules, telephone and electrical outlet locations, and color plans for painting and flooring. We also will coordinate the supervision of all tenant interior work with the architects.

Also in New York City, a two-story preview theater in a skyscraper office building, seating 100 and equipped for both 16 and 35 mm film projection, is a highlight of new offices we designed for Warner Brothers Pictures, Inc. The theater is panelled in natural walnut and has its own air conditioning system for 24-hour operation.

We began our Warner's assignment with a thorough research exploration of the client's requirements. We spent nearly four months studying work flow and job functions in Warner's New York staff to determine the best office layout. As a result, we were able to move Warner's from a vertical operation in ten small floors to a horizontal operation on two floors while at the same time increasing job efficiency.

The New York office building boom which began in 1947 after 15 years of war and depression has already smashed all records and still is gathering momentum. The square footage of rentable area in new buildings has increased annually to nearly five million in 1957 and will go to 6½ million in 1958. In addition to buildings already under construction, at least 25 more are definitely scheduled for the future. New office space to be completed next year will be the largest in New York's history, even exceeding the 1925-33 boom years, when 138 office buildings were added to the city's skyline. Builders are now working on plans for 1960 and beyond.

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In this atmosphere of dynamic growth and expansion, the new space-planning profession is finding full play for its many talents and resources. Keeping pace with the architects who design the new office buildings, the space planners are designing the interiors of the city's skyscrapers, adapting them for efficient use by hundreds of business firms and companies who are the tenants. Each company has office problems peculiar to its own business or industry. It is in this area, by helping the tenant get the office best suited to his particular needs, that the planner offers an indispensable service.

Among the many considerations facing a company moving to a new location is the problem of employee morale and office efficiency, which is so directly affected by surroundings. This is especially important among secretarial and clerical employees, who far outnumber executives, and thus present the biggest morale problem. Employee efficiency is directly affected by the individual objects and environment of the office—including the employee's chair, desk, storage space, office equipment, telephone and other communication systems, lighting and air-conditioning, and even the location in the office.

The space planner and designer, by assuring modern office equipment and working conditions, can improve employee morale and office efficiency through office design that keeps fatigue and strain to a minimum. In the case of chairs, the backs, seats and arms (if needed) should be adjustable to fit the person who is using the furniture. In addition, the fabric of the chair should be "breathable"—natural textile fabrics which are porous, or perforated coverings if solid materials like plastic or leather are used.

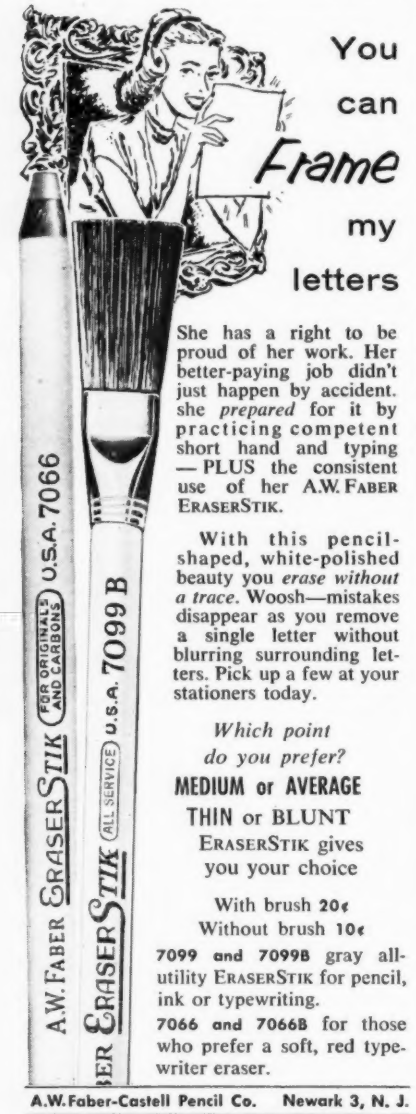
Desks also should be adjustable to each individual through movable legs which will bring the desk top to the most comfortable height. Ideally, desks also should be L-shaped—this increases the usable area 30 to 50 per cent without taking up more floor space. While lighting will vary for different clerical jobs, the minimum required is a light level of 50 foot-candles at desk level, or the equivalent of a 100-watt bulb about four feet from the desk. Fluorescent tubes mounted in overhead fixtures are the best kind of lighting at present because they give an even distribution of illumination.

Year-'round air conditioning is considered essential to any office today because it levels out temperature changes betwen the seasons and insures healthy, comfortable air 12 months in the year. Storage space, on the other hand, depends on the job; the minimum is drawer space in each desk adequate for the employee's working materials and personal belongings. Depending on the job,' office equipment should be self-contained in the desk or worktable, or, if too bulky, should be located adjacent to the work-station. This saves unnecessary traffic through the office. The same holds true for general storage areas, such as office files.

Sufficient intercom equipment between department heads, executives and employees also improves office efficiency and reduces traffic. Desk-to-desk intercom systems also are desirable, unless the employee is within easy walking distance of her superior. As to location, obviously people working together should be placed close together in the office. This is especially true of the executive and his secretary. Clerical workers location is best determined by the position of the equipment they use and the jobs they perform. The worker and his job belong side-by-side.

While the benefits of modern office planning are hard to measure, any employer has personal proof they make a big difference. Every personnel manager today knows it is easier to hire clerical personnel if his office is modern. Sound or noise always have been an occupational hazard of office workers, as well as the factory man. In addition to buying newer and less noisy office machines, such as electric and noiseless typewriters, more companies are adding acoustical ceilings and other sound-deadening materials to help reduce the general noise level. Employee efficiency rises as noise distractions decrease.

These are some of the ways the space planner and designer can serve the office



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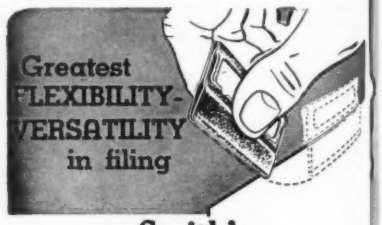

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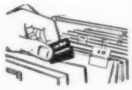

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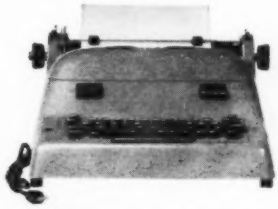

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manager, and a few specific examples of companies we have aided. Because our profession is relatively new, it still is small, but acceptance has brought growth, so our list of clients also is growing. With growth comes accomplishment, for ourselves and others—better space utilization, better office design, hence more efficient working conditions. This is good for all of us.

Job requirements—

(*From page* 34)

visory thinking should be geared along these lines. Here again management must evaluate the cost-saving potential of line supervision. If the man who is going to cost twenty dollars per week more, in salary and fringe benefits, is alert to the necessity for constant review and change, as opposed to the less "expensive" man, well then, that twenty dollar differential may very possibly lose its significance.

It's apparent then that cutting costs on supervision may also mean hiking operating costs of the department. This statement is particularly true when the processing involved is fairly complex. Obviously too, the more people employed on the staff, the greater the demands on supervision, and generally speaking, the higher the calibre of personnel required.

Those factors in business that are not readily definable are usually worthy of special consideration. There must be established some practical measure of a man's worth to his company. In the case of a salesman we know exactly how much he sells; we know how much a factory line worker produces; we know how many cards a key punch operator can punch per hour. Supervisory ability, however, is not so easily gauged. One can't time a man's thinking processes in the same way one can time the motions of somebody's fingers or hands.

Thought arrived at hastily is often inferior in quality. And a wide variety of factors must be considered. A man's background, experience, work habits, communicative capacities—both oral and written—must be evaluated. Then, and only then, if your man measures up to maximum specifications—if he impresses management as being alert, open-minded, idea-searching, progressive—and if you can get him for twenty dollars less, you're getting a real bargain.

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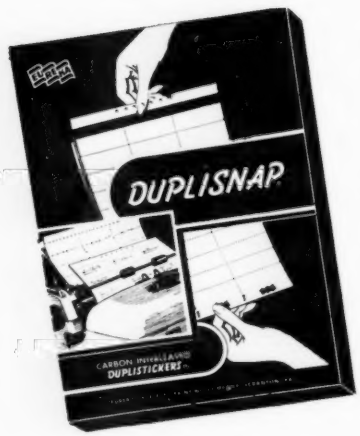

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Conference—

(*From page* 29)

"The recession is a challenge to us," he concluded. "While it is a bit deeper than the downturns of 1949 and 1954, it is still a moderate business contraction. We all have confidence in the future, and we are all optimistic for the long pull. The challenge is to speed up the recovery which we know will come. We can turn the tide with better selling."

Borg-Warner, too, according to Mr. Ingersoll, is accelerating some product development programs for immediate market acceptance. It is trying to do so, however, without jeopardizing longer-range activities. Although long-range planning has always been a responsibility of all divisions in his company, "greater attention is being given to this activity now than ever before. We believe that there was never a better time to plan carefully for the expansion which we are sure will come in the near future." In addition, Borg-Warner is stimulating its sales and marketing efforts throughout all divisions. Sales departments are encouraged to improve selling techniques to recapture the "lost art of selling."

Mr. McCabe recounted his firm's interest in new product development and research, and stated his belief that industry has not paid enough attention to human motivation. He predicted that more progress would be made in the social sciences and their applications to human relations during the next ten years that in any other aspect of business.

Mr. Wampler, apart from covering Carrier's stepped-up program in capital expenditures, research and development and other areas, discussed what companies should *not* do to stem both their individual and the nation's recessions.

"We of top management must not handle ourselves in a manner which will cause our associates and particularly those who are younger to get the idea that this is a period of great trouble and apt to continue for a long time.

"Putting this positively, we must constantly reaffirm our faith in America and its people. And right here and now I wish to express my own deep-seated conviction that even the mental and moral and spiritual causes of the recession will in due course be effectively dealt with . . . And yet I have to admit this—it may take longer than it should for [the American people] to realize that selfish leadership is not good leadership."

In his speech, "Management Action in Today's Economy," Mr. Watson stated that IBM has been planning and acting in several areas since its sales began to slow down last September. "In sales," he said, "we are concentrating on improving the efficiency of our representatives—emphasizing more prospecting—trying to eliminate paper work." Selling techniques have changed tremendously in the past 15 years, Mr. Watson observed, and IBM has been examining its own salesmen activities.

"Generally, we're going back to emphasizing the fundamentals in selling that haven't changed in 50 years. Every salesman is going to report on a weekly basis not only calls, but also demonstrations and proposals, as well as the business closed and the percent of quota which has been achieved. The field managers are going to keep weekly records on hours spent in the office, hours spent in the field, and, most important, the number of calls made with the younger salesmen."

IBM at present does not expect to cancel or reduce any of its capital investment plans. Expenditures in research likewise are increasing as planned.

"It seems to me," he continued, "that this recession should make all of us in management realize that we have a larger responsibility than that of managing our own individual companies. We each have a responsibility

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for the overall economic welfare of our nation. One hears complaints about government control of business, and yet, analyzing the controls we resent, we will see that many of them have been brought about by business practices in the past which needed some supervision and control.

"Business executives are going to have to learn how to manage their businesses so as to make recessions few and far between, and if they do occur, to keep them shallow and prevent real depressions. If we are unable to do this, I'm confident that the voters of the country through the government will impose on our business community greater and greater controls, and we will lose more and more of the free enterprise system which we all admire.

"I suspect more control—if it comes, will be because we as businessmen have not fully realized our responsibility to society."

Panel solution sought

The afternoon session of Monday's program consisted of a question-and-answer period among panelists and Mr. Jonsson. A summary of the panel discussion, made by Mr. Tait, concluded the day's activities. Chairman for this session was William C. Stolk, president of the American Can Co., New York.

Tuesday morning's meeting featured a six-man panel of speakers. Again, speed-ups in new product development, selling effort and cost control led the list of recession cures advanced by participating executives. Included in this panel were Ralph J. Cordiner, president of General Electric Co., New York; Frederick R. Kappel, president of American Telephone & Telegraph Co., New York; William C. Decker, president of Corning Glass Works, Corning, N. Y.; Franklin J. Lunding, chairman of the board, Jewel Tea Co., Inc., Chicago; Elisha Gray II, president of Whirlpool Corp., St. Joseph, Mich., and Charles H. Percy, president of Bell & Howell Co., Chicago. Presiding as chairman and associate chairman for this session were Don G. Mitchell, chairman of the board and president, Sylvania Electric Products, Inc., New York, and Elmer L. Lindseth, president of The Cleveland Electric Illuminating Co., Cleveland, respectively.

Mr. Decker reported that Corning Glass' sales for the first quarter of 1958 were up by four per cent, largely due to a 14 per cent increase in the sale of the company's consumer products. The month of February was the biggest single month in the 30-year history of the Consumer Products Division.

This increase in sales volume, Mr. Decker said, was achieved from improvement in the appearance and usefulness of many products in the line, and a stepped-up merchandising operation and advertising campaign.

"In short, we did not just ask the housewife to buy our product. Instead, we first determined what she wanted, then we produced a product to her specifications, and finally we pushed the product as hard as we could . . . The public will buy if industry will offer new, attractive and useful merchandise. It is industry's responsibility to have the imagination to determine the needs of the public and then to do something about it."

Mr. Gray recommended a more customer-oriented sales approach. The appliance industry cannot appeal to the housewife on the grounds it isn't making a profit, he said, for she doesn't care. It must show her that prices are now more favorable than they will ever be again, that she is getting more cubic feet of refrigeration for her dollar, for example, than she got ten years ago.

Mr. Lindseth offered a 12-point program to improve business, while summarizing suggestions made by speakers at the conference:

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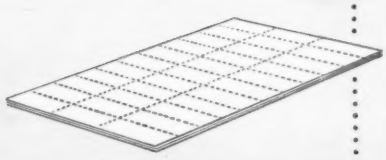

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"Look closely at the cost of every product and service to eliminate waste:

"Sell 'smarter and harder' and back up salesmen with better promotion and advertising; be more creative in developing new markets;

"Reduce prices if you can build volume that way; if not, try to hold prices firm;

"Maintain or increase research and engineering, particularly new product development;

"If possible, maintain capital expenditures to replace obsolete plant and equipment;

"Keep trying to improve the organization in structure as well as in manpower. Consider stock options, bonus plans and other incentives to increase efficiency;

"Work to increase employee participation and understanding of the 'economic facts of life';

"Use every skill of good management; don't sacrifice long-range goals for short-range expediency;

"Make an effort to educate the public about the relationship between wages and productivity;

"Do not turn to government for aid that is not appropriate to its proper role in the economy;

"Get to work and do something to promote recovery."

Vice President Nixon acted as chairman for the afternoon's panel discussion, at which time Mr. Mitchell joined the morning's speakers to enlarge upon questions developed during the luncheon.

AMA President Lawrence A. Appley presided as chairman during Mr. Eisenhower's part of the program. Earlier, Mr. Appley reported on results of a recent nationwide AMA survey conducted among 688 member company presidents on the economic outlook for the remainder of 1958. The results showed that, except in one instance, more than one-half of the respondents indicated banner-year prospects for 1958. More than 50 per cent indicated plans to spend more or the same amount as last year in capital expansion, advertising and sales promotion, research and development, and direct sales effort. Similarly, 52.5 per cent expect to equal or attain a larger sales volume in 1958, as compared with 1957. The single exception to this optimistic view was in the area of profits. Here, 42.5 per cent expect either more profits in 1958 or profits identical to those of 1957, while 56.9 per cent anticipate a drop in profits this year. (For complete details of survey, see p. 6.)

Business indicators—

(*From page* 21)

To quote R. S. Ingersoll, president of the Borg-Warner Corporation at the same Economic Mobilization Conference, it has meant certain very definite things at Borg-Warner:

"One of (our) annual procedures has been to develop what we call an operating level study. Each year all divisions and subsidiaries are asked to study their controllable expenses and profit margins in the light of theoretical changes in sales volume from the level they had forecast for the next twelve months. For several years, the study covered sales volumes 10 and 20 per cent above and below the forecast, thus covering a forty percent spread. The effects of 5 and 10 per cent price reductions on the profit margins also were calculated. Such a technique, if conscientiously followed, draws attentio nto unnecessary overhead costs, particularly when reductions in sales vol-

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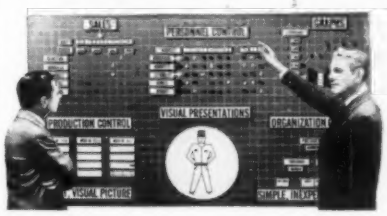

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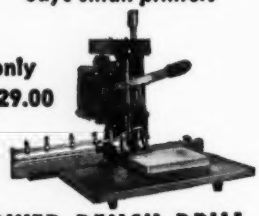

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ume show shrinking profit margins. Most divisions also derive help from studying a well-blueprinted plan for cost reduction whenever sales volume begins to fall.

"When the requests for this study were being prepared last Fall, we thought we saw a different pattern developing in the sales outlook from that prevailing in previous years. We asked that the study cover cost control for reductions in sales volume from the 12-month forecast of 10, 20, 30, and 40 per cent. You can imagine that such a drastic reduction in theoretical sales volume caused an even greater percentage reduction in profit margins.

"This study, of course, has pointed out most effectively to several divisions that they must solidify their cost reduction plans, tighten up on their variable budgets, and intensify their efforts in this phase of their operations.

"Once a year, all the divisional controllers meet at our company headquarters to discuss accounting procedures and practices. You can be sure that the theme of this year's meeting held a few weeks ago was cost reduction and control.

"Each controller was asked to re-examine his divisional cost standards, variable operating budgets, purchasing practices, and inventory and production control procedures all with a view toward tightening these controls and developing procedures which will allow these overhead functions to be accomplished at lower cost. This same theme was followed in the two quarterly meetings held already this year with all the divisional presidents."

Borg-Warner's president went on to say that cost reduction committees had existed in many, but not all Borg-Warner divisions for several years, but the new emphasis on working out detailed plans for specific cuts to be made if sales fell far below forecasts has spurred the committees to much greater activity than ever before.

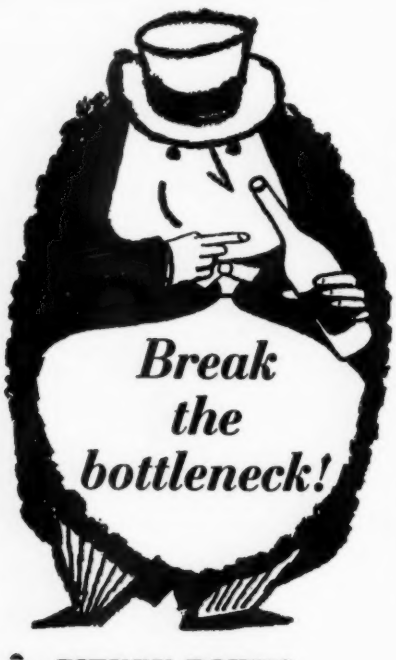
Positive action needed

The Borg-Warner lead shows what can be done by well-guided companies to meet any contingencies that may arise in a period when the future is still uncertain. In effect, what Borg-Warner is doing is protecting its flank and its line of retreat, to use military terms. It is still making plans based on sales forecasts, but it is not assuming that any forecasts are infallible; it is making plans for the exact measures to be taken if business falls far below the sales figures anticipated, as well as planning for the measures to be taken, the staff to be added if the sales forecasts prove too conservative, and business is much better than anticipated.

In other words, the company is preparing for all contingencies, good and bad, to the best of its ability, rather than preparing only for continuing expansion.

But cost cutting is only a protective device, of course; while it preserves company profits, it does not increase total company income. How is that to be done if the satiety theory should prove valid?

There are two major solutions available—and the companies represented at the Economic Mobilization Conference seem to be pursuing both of them vigorously. More effort is being put into sales and promotion, and more effort is also being put into pushing research and development of new products. Even where stringent cost cutting has been the order of the day, many companies have expanded their expenditures in these fields.



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In general, judging from the experiences reported at the AMA conference, heavier selling efforts combined with price cutting to move into a market previously unsold is producing results. This again would fit in with the satiety theory, and is an obvious path for a company making, say, semi-luxury goods to follow. How well it would work to stimulate people to replace durable goods with newer models isn't as clear. What is clear is that purchasing power is still high, and that people are willing to buy things they want and don't have at the moment if the goods are effectively sold. The market for boats of all types, a luxury item, hasn't suffered as the automobile market has; as a matter of fact it's still growing.

So, if a rule of thumb were to be developed it might be that for a company in an elastic market, every effort should be bent toward cutting prices and heavier selling. For the definition of an elastic market is one where demand grows as price is cut. When purchasing power is still high such a market would exist for many of the luxury and semi-luxury commodities—cameras and cabin cruisers, hi-fi sets, travel, air conditioners, home furnishings and equipment.

And what of the inelastic market—the market where most people have as many units of the commodity—cars, washing machines, television sets—as they think they need, and are, at the moment, in a mood to replace such units only when they are worn out? Here, it would seem, intensive research and development would pay the quickest and most profitable dividends. Intensive selling efforts will produce some results, chiefly in marginal markets which do not yet have the goods in question, or have products so old they really need replacement. But under the satiety theory, these markets are relatively small. The major markets already supplied would be most easily expanded by really dramatic improvements in the goods being offered—improvements that would make the present units truly obsolete, not in terms of style, but in terms of function.

But, whichever category a company falls into, there is a need for positive action besides the protective action of cost cutting. And the positive action necessary will mean that indiscriminate cost cutting across the board is not only foolish, but self-defeating. Perhaps programs should be screened much more carefully than ever before, but, on the whole, this is a logical time for many companies to increase expenditures for sales and promotion, research and product development.

This implies major new responsibilities for the office as the nerve center of the company; the "money mart" as it were, where budget allocations, action plans for the company in a period of either rising or falling sales, and the reporting functions which show management exactly what is happening in the company day-by-day must all be worked out. The office must act as a control center for all company activities, and it must work more quickly and more accurately than was necessary in a time of unprecedented prosperity. It must, if it is to reconcile departmental cost estimates intelligently, work in full understanding, not only of what the company does, but of the company's role in the whole present economic picture. It must know whether it is making products for a current relatively elastic or inelastic market, the size and buying potential of its untapped marginal markets, its price structure as compared to its competitors.

This is not a new role for the office, except in terms of the easy-going

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habits developed in the boom years, and the high personnel turnover which made it mandatory to train people quickly to do specific jobs, and not worry too much about overall indoctrination. It is in fact the traditional and true role of the office. And it is a role that is vital in the economic picture today, and in the economic picture as it will probably exist for some time to come.

NOMA—

(*From page 22*)

cost reduction today than ever before, Mr. Clayton told the NOMA group, and the extensive growth of firms specializing in offering management consulting services in this field indicates that such interest is increasing.

Continued emphasis on cost reduction is important, he continued, because "in my opinion, there will be no great reduction in the number of clerical workers stemming from greater use of machines or electronic data processing. Thus, other approaches must be made to decreasing clerical costs."

But such emphasis on cost reduction must be handled with skill and care, he warned.

"Some well-intentioned programs of clerical cost reduction do lasting harm, and at best could only achieve short-term savings," he pointed out. "Moreover, the same short-sighted practices that brought unionism into the shop are now being practiced by some offices."

The office manager's job responsibilities should include cost reduction, he stated, and this particular responsibility will grow in importance as the number of clerical employees continues to grow, both in total number, and in proportion to total employee count. But it is equally every office manager's responsibility, he conteded, to insure that his cost reduction planning does not lead to abuses of employees, or employee dissatisfaction, since that could very easily lead to clerical unionization.

Mr. Crowley, who reported that the total of white collar employees in the nation had increased from 20 million in 1947 to 26 million in 1957, predicted that the shortage of clerical workers would grow worse in the next ten years. This will be aggravated by the fact that distinctions in pay and status between clerical and factory employees are disappearing, he declared.

"Thus, the threat of unionism is increasing," he went on. "There are three million clerical workers organized now, and another 14 million are considered by the unions as an excellent potential audience."

Within the next ten years, too, he said, there will be:

1. The "real arrival" of mechanization.
2. A substantial increase in the use and the applications of integrated data processing.
3. Considerably more use of data stored on tape or on magnetic drums.
4. More acceptance by both government and business of "input" reports and figures from other groups in the form of tab cards and tapes.
5. Greater use of dictating machines.

Moreover, he anticipates the day, Crowley continued, when machines will be able to make direct written transcriptions from voice dictation, although that might not be achieved within the next ten years.

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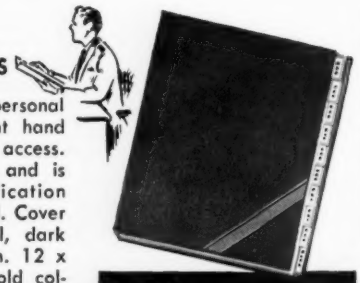

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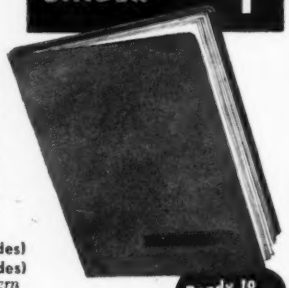

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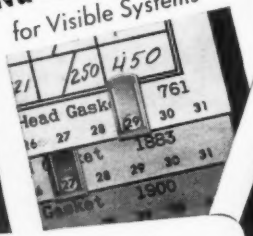

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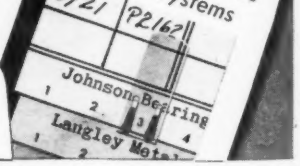

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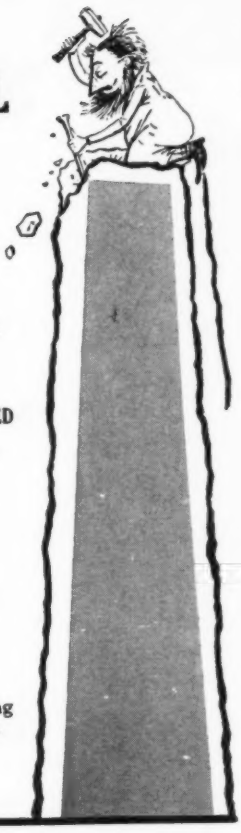

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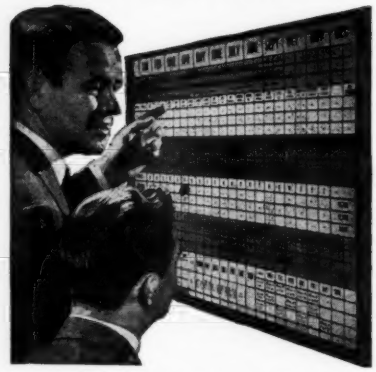

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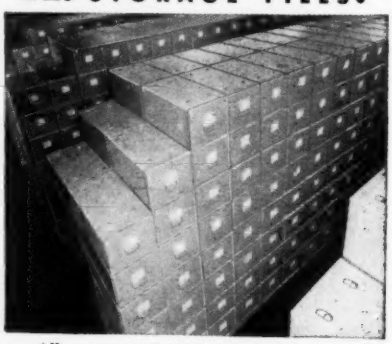

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Because of advances in mechanization and electronics, there will probably be a reduction in the total number of clerical workers engaged in purely manual types of clerical work. This will cause many problems of relocation of workers which management will have to solve. It will also mean that there will be a substantial upgrading of most clerical jobs, which in turn will make necessary better education for workers, and more highly developed job training programs.

"Unquestionably, too, there will be an increase in union activities in clerical fields," he went on.

Within the next ten years, there will probably be a drawing back of clerical functions that are now carried by various departments of the company to the central office, he stated. The office will resume its function as a center for the company.

And, last but not least, he concluded, he foresees the day when office functions are recognized as so important that a vice president of management information will be a common title on company tables of organization.

Small companies—

(*From page 61*)

pared summarizing tract and field totals. The annual summary cards are used for the depletion calculations on IBM machines.

Accounting for oil and gas revenue is only one of many applications performed on accounting machines, but to midwest it is the most important and has contributed the most to the reduction in manual work and the speeding of vital reports to management. Even the sorting of statements, which once was a two to three day job and can now be done in a matter of minutes, has made the change worthwhile. Instead of requiring the labor of every available person in the accounting department, only a small group of two key punch operators and a tab supervisor is now required. Yet this small complement of personnel still has time to handle all the other machine accounting work. But what is really appreciated, by clerks as well as by management, is the ability of the machines not only to perform the calculations, but to direct the performance as well.

This would be an example of pure "first level" automation, achievable without a computer. An example of an organization which is using a small computer to take some advantage of the computer's two basic advantages—higher processsing speed for routine paperwork functions *and* summarization for reports not previously feasible is offered in a bank installation in New York.

The First National City Bank of New York, the first bank in the world to install the Burroughs Series E—desk sized computer, has reported that the added installation of "E" tape input and output units, has improved the recording of the bank's daily commercial loan activity with a calculation of interest due and a projection of an accrual of a loan to the first of the following month.

By-products from the posting of transactions are a journal and allocation of loan earnings by geographical districts. Supplementing the daily journal is a report made specifically for the General Bookkeeping Department showing the outstanding loans by various classifications and a report of the previous day's net activity in these classes.

Under the old manual system, it was necessary to transcribe all interest accounting to an interest statement so it could be properly billed for interest due. Now the commercial loan department takes a photo copy of the actual loan record and sends this to the customer who pays the last amount shown on the record.

Since the installation of two Burroughs computers with input and output units the First National City Bank has achieved the following advantages in its commercial loan department:

1. Better record of the commercial loan interest and discount activity.

2. Distribution of earnings by loan districts on a daily basis instead of once a month.

3. A daily proof by account classification is now available to the General Bookkeeping Department.

4. Additional detailed reports (such as loan amortization schedules) are now available.

5. As photographic reproductions of the loan card can now be made, interest billing and control are greatly simplified.

6. A visual readout coupled with checking controls has eliminated clerical error.

An example of how one electronic installation can carry out both first and second level automation—the handling of great masses of clerical data, and the elimination of previous clerical routines and intermediate reports necessary under earlier methods in favor of summarized operating information is illustrated by the electronic installation study recently worked out for the State Government of Minnesota. The study, conducted by Booz, Allen, and Hamilton, New York management consultants, had as its basic objective exploration of the feasibility of applying electronic data processing techniques to administrative operations within the state government.

All activities of the state administration were screened to determine the areas which seemed to offer the greatest possibilities for electronic data processing techniques, with particular attention being given to the volume and complexity of the clerical functions carried by each state department or agency.

This initial screening resulted in the selection of sixteen state departments and agencies for more specific examination. The sixteen agencies were chosen on the basis of:

1. The apparent load of clerical and procedural activity.
2. The apparent complexity of procedural operations.
3. The relative importance of the activity in the total administrative structure of the State government.
4. The probability that benefits could be achieved through installation of electronic data processing equipment with a minimum revision in the administrative structure of the government.

The departments chosen for more intensive survey were:

1. Motor Vehicle Division
2. Department of Highways
3. Department of Taxation
4. Department of Employment Security
5. State Auditor
6. Department of Administration
7. Department of Public Welfare
8. Department of Conservation
9. Railroad and Warehouse Commission
10. Department of Health
11. Department of Education
12. Department of Agriculture, Dairy and Food
13. Division of Insurance
14. Department of Civil Service
15. Department of Labor and Industry
16. State Employees Retirement Association (SERA)

Further intensive screening of these selected administrative areas was devoted to the relative potential within each for electronic data processing equipment. The breakdown made after this second screening was:

Great Potential
- Motor Vehicle Division
- Department of Highways
- Department of Taxation
- Department of Employment Security

Large Potential
- State Auditor and State Treasurer (accounting function)
- Department of Administration
- Department of Public Welfare
- Department of Conservation
- Railroad and Warehouse Commission
- Department of Health
- Department of Education

Small and Moderate Potential
- Department of Agriculture, Dairy and Food
- Department of Insurance
- Department of Civil Service
- Department of Labor and Industry
- State Employees Retirement Association

From this breakdown, four departments and one function extending through many departments — overall accounting—were chosen for detailed procedural analysis. Three of the departments — Motor Vehicle Division, Department of Highways, and Department of Taxation—were selected because each had one or more major mass data processing operations which seemed almost made to order for an electronic installation. The Department of Public Welfare was included because of "its large size, the wide variety of activities, and the feeling that incidental benefits would be derived from an intensive procedures study, these benefits going beyond direct data processing savings."

The electronic application in the first three departments, in other words, illustrates the principle of "first level automation" — the assumption of traditional clerical functions by machine in order to speed and increase the accuracy of the processing sequence. In this instance, the huge masses of data involved justified use of a computer. In smaller organizations, other machines might be more appropriate.

(To be continued)

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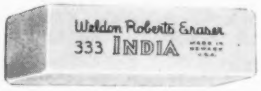

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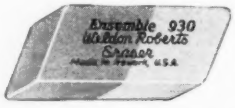

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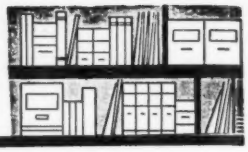


Duplicating Supplies

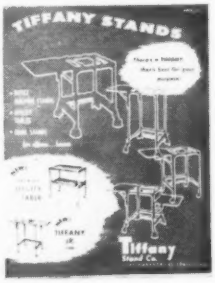
Michael Lith, Inc., 143 West 45th St., New York 36, N. Y. Two-color, 48-page catalog (#22), describing recent advances in offset duplicating supplies for organizations with Multilith, Davidson, A. B. Dick, Whitin, and similar duplicating machines. **(1)**

Interiors Planning

United States Plywood Corp., 55 West 44th St., New York 36, N. Y. Brochure, *Functional Beauty for Interiors,* presenting work of many leading designers and architects to aid executives in planning interiors of buildings. **(2)**

File Cabinets

Ramsey Co., 116 South 7th St., Philadelphia 6, Pa. Fifteen-page catalog (101) of "Tract-A-File" filing equipment, presenting illustrated listings of file cabinets and equipment for storekeeping. **(3)**

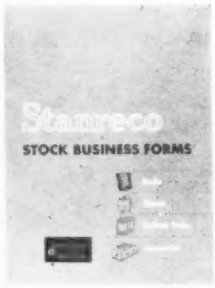


Office Machine Stands

Tiffany Stand Co., Inc., 7350 Forsyth Blvd., St. Louis 5, Mo. Catalog, *There's a Tiffany that's best for your purpose,* including new Model 2300 Tiffany Utility Table, Model 7711 Tiffany Jr., and other models. **(4)**

Shipping Room Supplies

Diagraph-Bradley Industries, Inc., P. O. Box 269, Herrin, Ill. Catalog, *Your Handy Helper,* giving shipping information and illustrating the company's line of shipping room supplies, including new "Rol-It-On" roller stencil process. **(5)**



Business Forms and Systems

The Standard Register Co., Albany & Campbell Sts., Dayton, Ohio. New 48-page catalog providing illustrated data on stock forms for control of business, and a special section on forms not necessarily employed in systems. **(6)**

Water Cooler Units

Cordley & Hayes, 443 Fourth Ave., New York 16, N. Y. New 20-page catalog (#58) describing and illustrating complete line of water cooler units with advice on location sites and accessories. **(7)**

For further information, use Reader Inquiry Card on page 80.

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FOR SALE: SELECTOR DIAL Auto-Typist, attached Remington Standard Noiseless, Perforator, Supplies. In use 2 years. Parts warranty. If new, cost $1,913.85 plus attaching typewriter. Sale price $1175 with typewriter; without $1125. MMS Corp., 2217 N. Summit, Milwaukee, Wis.

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(Circle respective page numbers on which ads appear)

Page	Page	Page	Page
2nd Cover	43	68	75 WAF
3rd Cover	47	69	76 GS
3	51	70	76 CI
4	55	71 MRC	77 MI
7	57	72 LPI	77 ALC
8	59	72 PBI	78 WRR
9	62	73 RPC	79 BPC
10	63	73 AVR	79 LPC
11	64	74 SMC	79 CPC
12	65	74 GBG	79 SCS
13	66 AWF	75 GJA	79 DEC
15	66 CCS	75 SPA	81
16	67 AFM	75 OM	
18	67 BIF		

Fractional page ads further identified by initials of advertiser

July 1958 New Products Items, and Catalogs
(Circle respective item numbers)

1	A-1	B-1	C-1	D-1
2	A-2	B-2	C-2	D-2
7	A-3	B-3	C-3	D-3
4	A-4	B-4	C-4	D-4
5	A-5	B-5	C-5	D-5
6	A-6	B-6	C-6	D-6
7		B-7	C-7	D-7

TOOLS OF THE OFFICE
Information on products listed in the Tools of the Office section may be requested by writing in names of manufacturers.

Manufacturer	Page No.

Name ..... Title .....
Company .....
Address .....
City ..... Zone .... State .....
Number of Office Employees (all departments) .....

July 1958 Issue
Office Management
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ADVERTISERS' INDEX

Acco Products Div. of Natser Corp 81
Agency—La Porte & Austin, Inc.

Acme Visible Records, Inc 73
Agency—E. H. Brown Adv. Agy.

Advance Floor Machine Co 67
Agency—Vance Pidgeon & Assoc., Inc.

Advertising Council Inc., The 58

Aigner Co., G. J 75
Angency—Arthur R. MacDonald, Inc.

American Lithofold Corp 77
Agency—Burlingame-Grossman Adv.

American Telephone & Telegraph Co 3
Agency—N. W. Ayer & Son, Inc.

Beach Publishing Co 79
Agency—Francis Adv. Agency

Browne-Morse Co 65
Agency—Don Harding & Assoc.

Burlington Industries 67
Agency—Ben Sackheim, Inc.

Burlington Industrial Fabrics Co 67
Agency—Ben Sackheim, Inc.

Burroughs Corp 69
Agency—Campbell-Ewald Co.

Can-Pro Corp 79
Agency—Ramsthal Adv. Agy.

Columbia Ribbon & Carbon Mfg. Co., Inc. 16
Agency—E. M. Freystadt Associates, Inc.

Convoy, Inc 76
Agency—Rex Farrell, Inc.

Dennison Mfg. Co 70
Agency—Batten, Barton, Durstine & Osborn, Inc.

Dewberry Engraving Co 79

Dick Co., A. B 11
Agency—Fuller & Smith & Ross, Inc.

Diebold, Inc. (Flofilm Div.) 9
Agency—Ritter, Sanford & Price, Inc.

Du Pont de Nemours & Co., Inc., E. I. (Grasselli Chemicals Dept, Luddox Wax) 63
Agency—Batten, Barton, Durstine & Osborn, Inc.

Eastman Kodak Co., Business Photo Methods Div., Verifax 59
Agency—J. Walter Thompson Co.

Eureka Specialty Printing Co 68
Agency—Kretschmer & Dinner, Inc.

Faber-Castell Pencil Co., Inc., A. W 66
Agency—J. M. Kesslinger & Assoc.

Force & Co., Inc., Wm. A 75
Agency—Philip I. Ross Co.

General Electric Co., Commercial & Industrial Air Conditioning Dept 12
Agency—Erwin, Wasey, Ruthrauff & Ryan, Inc.

General Fireproofing Co., The 10
Agency—Griswold Eshleman Co., The

Graff Co., George B 74
Agency—Henry A. Loudon Adv., Inc.

Graphic Systems 76
Agency—Diener & Dorskind, Inc.

Haloid Xerox, Inc ..... 3rd Cover
Agency—Hutchins Adv. Co., Inc.

Inter-Continental Trading Corp 13
Agency—Mann-Ellis, Inc.

nternational Systems Meeting 75
Agency— The Albert P. Hill Co., Inc.

Lassco Products, Inc 72
Agency—Wilkinson Advertising

Lindy Pen Co., Inc., The 79
Agency—Sheldon Marks Adv.

Linen Supply Association of America & Nat'l Cotton Council 8
Agency—Hartman Co., George H.

Macey-Fowler, Inc 4
Agency—Givaudan Adv., Inc.

Manpower, Inc 77
Agency—Fromstein & Levy Adv.

Methods Research Corp 71
Agency—Vincent J. Mielcarek Adv.

Minnesota Mining & Mfg. Co 62
Agency—Erwin Wasey, Ruthrauff & Ryan, Inc.

Monroe Calculating Machine Co 57
Agency—L. H. Hartman Co., Inc.

Moore Business Forms, Inc 47
Agency—N. W. Ayer & Son, Inc.

l ational Cash Register Co., The 7, 16
Agency—McCann-Erickson, Inc.

Office Management 6, 14, 75

Olympia Typewriter Div., Inter-Continental Trading Corp 13
Agency—Mann-Ellis, Inc.

Ozalid Div. of General Aniline & Film Corp 15
Agency—Benton & Bowles, Inc.

Photostat Corp 64
Agency—Rumrill Co., Inc., The

Pitney-Bowes, Inc 72
Agency—L. E. McGivnea & Co., Inc.

Roberts Rubber Co., Weldon 78
Agency—La Porte & Austin, Inc.

Ronald Press Co., The 73

Royal McBee Corp 53
Agency—C. J. La Roche & Co., Inc.

Scriptomatic, Inc 43
Agency—Roland G. E. Ullman Organization, Inc.

Shaw-Walker Co 71
Agency—J. Walter Thompson Co.

Smead Mfg. Co., The 74

Smith, Inc., Charles C 66
Agency—Ayres, Swanson & Assoc., Inc.

Smith-Corona, Inc ..... 2nd Cover
Agency—Cunningham & Walsh Inc.

Steelcase, Inc ..... 4th Cover
Agency—Wesley Aves & Assoc.

Stenographic Centering Scales 79
Agency—Ross Advertising

Systems & Procedures Association 75
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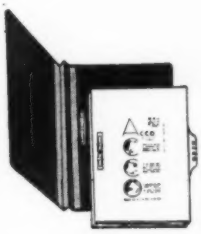

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editorial

Profile of our reader

We begin next month a series which we think will interest you as the facts behind it have certainly interested us. We have recently taken a survey aimed at establishing a profile of the typical *Office Management* reader, or rather the main categories of *Office Management* readers, since one of the most definite facts shown by the survey is the multitude of job titles, job responsibilities, and fields you represent.

The final correlations and summaries are now being made on the raw data of the survey, but even the basic information shown on the first tabulations indicates the astonishing range of responsibilities incorporated in various phases of office administration.

There are financial men among you, and systems people, machine accounting specialists, and personnel directors. Your companies are legion, but so are the business areas in which those companies operate. Your responsibilties range all the way from decisions on electronic data processing equipment to selecting the best employee group insurance package.

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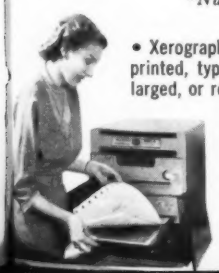

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